

Northampton Urban Sanitary Authority.



. Annual Report .

ON

THE HEALTH

OF THE

County Borough of Northampton,

For the Year ending Dec. 31st,

- 1904, -

BY

JAMES BEATTY, M.A., M.D., D.P.H.,


Medical Officer of Health, Superintendent of the Borough Hospitals
for Infectious Diseases, and Police Surgeon.



NORTHAMPTON :

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*To the Mayor, Aldermen, and Councillors, of the
County Borough of Northampton.*

GENTLEMEN,

I have the honour to submit to you my second Annual Report on the health of the Borough, which deals with the year 1904.

The Report contains the vital statistics of the year, the statistics of the infectious diseases which occurred during the year, the work of the Borough Hospitals, and an account of the sanitary administration carried out under my supervision.

There are two additional features in this year's Report, to which I wish to draw your attention. The first is an account of the physiography and geology of the district, kindly contributed by Mr. Beeby Thompson, F.C.S., F.G.S. The second is a statement of certain of the more important features of the meteorology of the year derived from reports furnished to me by Mr. Primavesi, Optician, Gold Street.

The following are special features of this report :—

Calculation of the population.

The falling birth-rate.

The infant mortality rate, result of investigations.

Directions on the feeding of infants.

The notification of phthisis, result of investigations.

Scheme for dealing with consumptives.

The epidemic of scarlet fever.

Precautions against measles.

Summer diarrhœa.

Summary of the statistics for each Ward.

The Borough Hospital, results and suggestions

Cellar dairies.

The outstanding features of the year are the low death-rate, the low birth-rate, the epidemic of scarlet fever, and the mortality from diarrhœa.

I desire to thank you for the courtesy which has almost invariably been shown to me, and for the attention you have paid to my suggestions during the year.

I am, Gentlemen,

Yours obediently,

JAMES BEATTY,

Medical Officer of Health.

Public Health Office,
20, Guildhall Road,
Northampton.

May, 20th, 1905.

CHIEF FIGURES, 1904.

ESTIMATED POPULATION	..	..	..	..	..	..	90,340
AREA IN ACRES	..	..	..	..	..	..	3,469
INHABITED HOUSES (census 1901)				..	..	..	17,602
DENSITY OF POPULATION (census 1901)							25.36 persons per acre. 4.94 persons per house.
RATEABLE VALUE (year ending March 31st, 1904)	..						£362,438 os. od.

BIRTHS.

MALES.	FEMALES.	TOTAL.	BIRTH-RATE.
1066	1036	2102	23.3

DEATHS.

MALES.	FEMALES.	TOTAL.	DEATH-RATE.
579	606	1185	13.1

Zymotic Death-rate	..	..	..	..	..	..	1.5
Infant Mortality Rate	..	..	..	..	..	..	132.7
Death-rate from Pulmonary Phthisis	..	..	..	..	..	..	1.15
Death-rate from Tubercular Diseases	..	..	..	..	..	..	0.44

DEATHS IN EACH QUARTER.

				1901.		1902.		1903.		1904.
First Quarter	..	..	..	290	..	347	..	312	..	307
Second Quarter	..	..	..	275	..	333	..	299	..	258
Third Quarter	..	..	..	345	..	283	..	264	..	302
Fourth Quarter	..	..	..	306	..	331	..	344	..	318
				—		—		—		—
				1216		1294		1219		1185
				—		—		—		—

PHYSIOGRAPHY AND GEOLOGY.

In the Memorandum as to Annual Reports of Medical Officers of Health, issued by the Local Government Board in October, 1903, the following statement occurs :—" As subjects concerning which the Board desire to obtain through Annual Reports of the Medical Officer of Health, not only definite general information, but record also of particular changes of condition that may have occurred incidentally, or by action of the local authority, the following deserve to be especially borne in mind :—" A list then follows of subjects to be treated. The first of these is " Physical features and general character of the District." The Memorandum goes on to say :—" With regard to such points' it should be remembered that these reports are for the information of the Board as well as of the Council of the District, and that a statement of the local circumstances and a history of local sanitary questions, which may seem superfluous for the latter may often be needed by the former body."

A sketch of the physiography and geology of Northampton has not been included in former reports. This year, by the kindness of Beeby Thompson, Esq., F.C.S., F.G.S., who has written the following account, I am able to remedy the deficiency.

" The Rev. Thomas Cox, in his 'A Compleat History of Northamptonshire,' 1730, says, ' The air of this County is exceedingly pleasant and wholesome, the sea being so remote, that it is not infected with its noisome fumes.' We can admit the general healthiness of Northampton and the County without subscribing to the cause assigned above. There is no doubt that the geological structure and physical features of the area occupied by Northampton, and by a large portion of the county, are such as would contribute to healthiness, and at least cannot be blamed for any ill health that is experienced. The special features in view are the frequent alternations of pervious and impervious strata, and the exceedingly numerous hills and valleys which prevent accumulations of water where it would stagnate near the surface: the two features conjointly give rise to very numerous springs of pure water where not artificially contaminated.

Northampton is a town set upon a hill, or at least the main portion of Northampton is. Excluding for the time some of the outlying districts only recently incorporated in the Municipal Borough, we may say that every road leading into the town crosses a valley quite near to, if not within the borough itself. In a similar sense Northampton may be regarded as standing on a peninsula, which is almost an island. There is only one road, the Welling-

borough Road, by which vehicles coming from outside the borough boundary can reach the main portion of Northampton without crossing a stream, and pedestrians could only effect their escape from the town without crossing a stream by a neck of land, about 740 yards in width, in the north-eastern parts of the borough, between the Wellingborough and Kettering Roads.

The river Nene and its tributaries almost completely surround the old town and large parts of the new. The northern branch of the river, which rises near Naseby, partly borders and partly runs through the western side of the borough. The westerly branch of the Nene, which rises near to Staver-ton, likewise partly runs through, and partly forms the boundary of the present borough on its southern side after uniting with the other branch near the gas works. A tributary stream, which may be considered as having its source in the small valley between Abington and the golf links, which crosses the Kettering Road, Gipsy Lane, Kingsthorpe Hollow, and which then runs into the northern branch of the Nene, may be considered as a northerly border of water. Another tributary stream, starting in a spring on the Wellingborough Road, near to Abington Park ponds, crosses the park and the Billing Road, and runs into the Nene near to Weston Mill, thus constituting an easterly border of water.

The lower portions of the valleys carrying the streams referred to above consist of impervious rocks over which the water runs ; the tributary streams on the north and east run over upper lias clay, and the larger streams in the west and south partly over upper lias clay and partly over River Alluvium.

The oldest rock exposed in or around Northampton is the upper lias clay, and this formation may be considered as the basement rock, though in the lower part of Bridge Street, and for an unknown distance east and west of this point, it is entirely absent, and the River Alluvium with its underlying valley gravel, rests upon middle lias beds ; this in consequence of a fault with an upthrow on the southern side. All the brickworks around Northampton use the upper lias clay.

Resting on the upper lias clay is the Northampton sand, and by far the larger part of Northampton stands upon this latter formation. In natural sequence over the Northampton sand would come the stiff dark clays of the upper estuarine beds of the Great Oolite series, and then the Great Oolite limestone itself. Within the area circumscribed by the Mounts, Bailiff Street, race-course, and Kettering Road, there is a fairly large patch of the upper estuarine beds, and fragments of the Great Oolite limestone, together with a little boulder clay in the neighbourhood of Clare Street.

Returning to the Northampton sand. Two main roads run through Northampton in a nearly north to south, and east to west direction respectively, which cross each other at the top of Bridge Street in the heart of the town ; the former will readily be recognised as a continuation of the Kingsthorpe Road into Bridge Street, and the latter as a continuation of Gold Street into the Billing Road. Speaking generally westward and southward of these roads respectively, the higher portions of the slopes are composed of the lowest beds of the Northampton sand, which are essentially ironstones. Northwards of the east west road and eastward of the north and south road, as the ground rises, the ironstone beds of the Northampton sand are gradually capped by variable beds of the same formation, which take the form of calcareous slaty beds, from the Billing Road beyond the Cemetery, by Abington Park, and on to Kingsley Park Road and Kingsthorpe. Over these calcareous beds, where the levels permit of it, are the so-called white sands, which may be white, grey, or purplish, and consist of such exceedingly fine particles that the bed may be almost as impervious as clay.

From the general geological structure of the area on which Northampton stands, it follows that water can be got almost anywhere by means of wells of variable depth according to situation going to the base of the Northampton sand, but, of course, much of the water is now too contaminated for general use, for besides the miles of sewers laid in this water bearing bed, all the old graveyards, and the General Cemetery are in it.

Again, since the Northampton sand on which most of Northampton stands is cut right through by the surrounding valleys, the bed is fairly well drained by numerous springs. Going round the town in the same direction as before, we have the spring in Gipsy Lane, the Race-course spring, some private ones on the western side of the town towards the river, and the old Scarlet well, then the old Vigo well, Thomas à Becket's well, Nine Springs well, Abington Park springs, etc.

There is one peculiarity about the geology of Northampton, it is this :— The general dip of all formations in Northamptonshire is downwards towards the south-east, but in Northampton itself the chief dip is westward and southward (not simply south-westward). For instance, just beyond the extreme north-easterly limit of the borough boundary towards Moulton Park, the base of the Northampton sand yields springs at about 300 feet above O.D., (Ordinance Datum), whereas springs having the same source on the western and southern side of the town are at about 200 feet O.D. This gives an extreme

dip of 100 feet in less than two miles in two directions and both abnormal ones. A portion of the 100 feet is no doubt to be accounted for by slipping of the Northampton sand on the wet clay slopes, but not all, for the dip seems to be pretty regular and not interfered with by any faults."

POPULATION.

The following figures have been obtained from the printed census returns:—

CIVIL PARISH.	Census, 1891.	Census, 1901.	Area in Acres.	Area in Acres, exclusive of water.
St. Giles' .. .	20202	25443	779	773
St. Sepulchre's .. .	19300	17419	272	271
St. Andrew's .. .	10625	9485	89	89
All Saints' .. .	9133	7403	125	121
St. Peter's .. .	1752	1414	46	43
Kingsthorpe .. .	7636	14099	1020	1013
St. James' } Dallington ..	1979	4566	185	184
} Duston ..	2174	2553	214	213
Far Cotton .. .	2182	4086	382	370
Abington .. .	92	553	357	355
Total .. .	75075	87021	3469	3432

The number of persons per acre therefore is as follows :—

CIVIL PARISH.	1891.	1901.
St. Giles' .. .	26.13	32.91
St. Sepulchre's .. .	71.21	64.28
St. Andrew's .. .	119.38	106.57
All Saints' .. .	75.48	61.18
St. Peter's .. .	40.74	32.88
Kingsthorpe .. .	7.54	13.92
Dallington St. James .. .	10.75	24.81
Duston St. James' .. .	10.21	11.99
Far Cotton .. .	5.90	11.04
Abington .. .	0.26	1.56
County Borough .. .	21.88	25.36

The density of the population in the older parts of the Borough diminished during the decennium 1891—1901.

As stated last year, the Civil Parishes do not correspond to natural divisions of the town ; in this report, therefore, I shall consider only the Wards, for the divisions between these are more natural and the populations more equal.

The populations, etc., of the Wards at the census in 1901, were as follows:—

WARD.					Population, 1901.	Area in Acres.	Persons per Acre.
St. Michael	..	..	..	..	13734	159.2	86.27
Castle	..	..	..	..	11185	142.0	78.77
St. Crispin	..	..	..	..	11153	114.0	97.83
South	..	..	..	..	7886	288.4	27.34
North	..	..	..	..	13781	297.2	46.34
Kingsthorpe	..	..	..	..	8979	960.0	9.35
St. James'	..	..	..	..	7119	399.3	17.83
Far Cotton	..	..	..	..	4086	382.2	10.69
St. Edmund	..	..	..	..	9098	726.7	12.52
Total	..	..	..	..	87021	3469.0	25.36

The populations of the Wards were not given in the 1891 census report and it is therefore impossible to say how much progress or retrogression has been made in any Ward during the decennium.

It will be observed that the Parish and the Ward of Far Cotton are identical, that the Ward of St. James is identical with the Parishes of Dallington St. James and of Duston St. James taken together, but that the Ward of Kingsthorpe differs greatly from the Parish of Kingsthorpe. The difference in the case of Kingsthorpe is due to the fact that the Parish of Kingsthorpe includes the population between Semilong and St. Andrew's Roads, which in forming the Wards has been taken from Kingsthorpe and given to the North Ward.

ESTIMATED POPULATION IN 1904. The number representing this is the most important, and at the same time the most difficult, to ascertain with any degree of close approximation to the truth. It is important, therefore, that more than one method should be adopted, so that each method may serve as a check on the others. Four methods have been employed to ascertain this basal figure.

1. The method of the Registrar-general. This assumes that the rate of increase since the last census is the same as was the rate of increase during the ten years between the last census and that immediately preceding it. Calculated on this basis, the population in the middle of 1904 was 91,400.

This method as applied to Northampton, to my mind, leads to an untrustworthy result. The decennium 1891—1901 was one of marked progress, especially in its later part, while the last three or four years have been years of depression. The figure 91,400 is probably decidedly too high.

2. Another method was employed last year to check the result obtained by the first method. Unfortunately, owing to a mistake, the figures supposed to apply to the years 1901 and 1903 really applied to the years 1900 and 1902, and the result obtained is necessarily vitiated by the error. The method consists in calculating the population from the numbers of persons entitled to exercise the municipal franchise in the census year and the year under consideration. I am indebted to the Town Clerk for the following figures :—

WARD.					Number of Voters, 1901.	Number of Voters, 1904.
St. Michael	..	..	..	..	2358	2326
Castle	..	..	..	..	1901	1713
St. Crispin	..	..	..	..	2019	1952
South	..	..	..	..	1431	1315
North	..	..	..	..	2353	2319
Kingsthorpe	..	..	..	..	1677	1810
St. James	..	..	..	..	1311	1440
Far Cotton	..	..	..	..	792	874
St. Edmund	..	..	..	..	1694	1834
The Borough					15536	15583

The first point to strike one in examining this table is the extraordinarily small increase of voters in the three years, and if the numbers so obtained fairly represented the growth of the town it would follow that the population is almost stationary. Two considerations, however, will show the fallacy in such a deduction. First, the question has not been considered whether any increase has occurred in the numbers in receipt of poor relief, for those who

receive this relief are deprived of the power of exercising the franchise. Second, it is possible for the population to increase while the number of voters remains nearly stationary if a number of people lose their votes by giving up their houses and becoming lodgers, provided these nearly approach the number who marry and take up housekeeping, or who immigrate into the town from the outside. In order to allow for the first consideration, I made enquiries of the relieving officers, and from Messrs. Afford and Brown I obtained valuable information bearing on the point. I have not obtained the figures from any other officer, but this probably does not vitiate the result, as poverty in the town is fairly evenly distributed, and the population in the districts with which these officers are concerned is a high proportion of the total population.

Mr. Brown's district takes in the Parishes of All Saints', St. Peter, St. Giles', and the Kingsley Park and Abington districts. Mr. Afford's district comprises the Parishes of St. Andrew and St. Sepulchre. In 1901, the population of all these districts taken together was approximately 68,767, a high proportion of the total population, 87,021.

In 1901, the average number of persons of all ages and sexes at any one time in receipt of relief in these districts was 1417, and the highest number at any one time was 1485. I have assumed the latter number as being the number with which I am chiefly concerned. By calculation, it appears that the total highest number in receipt of relief in the town in 1901 at any one time was 1879. To this number a certain addition must be made because all who have received relief, even for a short period, are disfranchised. The addition is a matter of guess work, but I am informed that $\frac{1}{5}$ or 20% should be added; this brings up the total in receipt of outdoor relief to 2255.

A similar calculation applied to 1904 gives the figure 2951. That the method is fairly reliable appears from the published figures of persons on outdoor poor relief lately in the whole union of Northampton (which includes a tract of country outside Northampton, but does not include Far Cotton). These figures are approximately 3000.

In addition to those receiving outdoor relief, the inhabitants of the Union Workhouse must be included. At the census in 1901 these amounted to 366, while in 1904 the number was approximately 400, to which 60 children in the scattered homes should be added for 1904.

The comparative figures are therefore in round numbers, 1901—2700, 1904—3500.

The figure 2700, deducted from 87,021, the population in the census year, gives a result of 84,320, and this is represented by 15,536 voters. As there were 15,583 voters in 1904, a result of 84,578 is obtained to represent them, and to this 3500 being added, a total population for the spring of 1904 of 88,078 is obtained. An addition is calculated to bring the result to the middle of 1904, and the final result obtained is 88,170.

This result, as before mentioned, is open to the criticism that many people may have given up their houses and become lodgers in other houses, thus losing the franchise. I have no means of determining to what extent this has taken place, but the impression of certain property owners whom I have consulted, and the impressions of the inspectors and myself in this office coincide in leading to the view that the depression in the staple industry and in others dependent on it has caused this change to a considerable degree. I am convinced, therefore, that the figure 88,170 is too low.

3. Another method of estimating the population is by comparison of the numbers of inhabited houses in 1901 and in 1904. The information for 1901 is derived from the printed census returns, and is given in detail on a later page, that for 1904 is not so easily obtained. I have obtained however, through the courtesy of the Borough Accountant, certain figures which he obtained last autumn, by ascertaining the number of houses in which the water rate was paid, and adding to these a small number of houses which have a water supply independent of the general supply to the town. The numbers so obtained are :—1901—17,602 inhabited houses ; 1904—17,935.

Assuming that the same number of persons on the average occupy each house, the population calculated for the autumn of 1904 is 88,665. When this figure is reduced to show the population for the summer of 1904, the number obtained is 88,524.

This result is open to the same objection as the preceding, viz., that a tendency has shown itself in the town for two families to share one house in order to economise.

There is, however, a singular agreement between the two results, as the numbers 88,170 and 88,524 differ only by 354. This seems to show that when either method is not available the other may be used for inferring the facts on which the first is dependent.

4. The last method is a simple one. It consists merely in ascertaining the natural increase, *i.e.*, the excess of births over deaths during the three years from the spring of 1901 to that of 1904, adding this to the census population, and making a further addition for the second quarter of 1904. This results in a population of 90,340.

The objection to this method is that it does not take into consideration whether there has been migration to or from the town. I have, however, decided to adopt this figure for the following reasons :—

- (a). It is an intermediate figure between extremes calculated in other ways.
- (b). The depression of trade in the town would prevent immigration into the town from the outside, and at the same time, the depression of trade being general throughout the country, there would be little tendency to emigration to other centres where the conditions were as bad.
- (c). Alderman Poulton, who is in a position to have special knowledge of the facts, assures me that as far as the staple industry is concerned, migration to or from the town by shoe operatives may be neglected in considering this question, as the amount is trifling.

The figure 90,340 may therefore be accepted with a considerable degree of confidence as fairly accurate.

It is more difficult to ascertain the population of the Wards. An approximate result may be reached as follows :—

The population of each Ward is given in the census returns for 1901. The number of persons entitled to exercise the municipal franchise is known for each year. Assuming the population at 90,340, it is first ascertained what

increase in each Ward this corresponds to, and the figure for each Ward so obtained is increased or diminished in the rates of the increase or diminution of the voters for 1904 compared with those in 1901. The results so obtained are added and found to exceed slightly the total 90,340, each was therefore slightly reduced in proportion to its amount to make the sum total 90,340. Stated in the form of a table, the figures are :—

WARD.	Population, 1901.	Voters, 1901.	Voters, 1904.	Estimated Population, 1904.	Average Number of Persons per Voter.
St. Michael ..	13734	2358	2326	14052	6.04
Castle ..	11185	1901	1713	10454	6.10
St. Crispin ..	11153	2019	1952	11184	5.73
South ..	7886	1431	1315	7517	5.72
North ..	13781	2353	2319	14077	6.07
Kingsthorpe ..	8979	1677	1810	10051	5.55
St. James ..	7119	1311	1440	8110	5.63
Far Cotton ..	4086	792	874	4678	5.35
St. Edmund ..	9098	1694	1834	10217	5.57
Total ..	87021	15536	15583	90340	5.80

INHABITED HOUSES.—The following table has been derived from the census returns and from figures furnished by the Borough Accountant :—

CIVIL PARISH.	Inhabi- ted Houses, 1901.	Average number of persons in each house.	Inhabi- ted houses Autumn, 1904.	WARD.	Inhabi- ted houses, 1901.	Average number of persons in each house.
St. Giles ..	5103	4.98	5063	St. Michael	2750	4.99
St. Sepulchre ..	3468	5.02	3377	Castle ..	2179	5.13
St. Andrew ..	1843	5.14	1697	St. Crispin ..	2182	5.11
All Saints ..	1484	4.98	1809	South ..	1618	4.87
St. Peter ..	300	4.71		North ..	2733	5.04
Kingsthorpe ..	2895	4.87	3104	Kingsthorpe	1886	4.76
St. (Dallington	944	4.84	1690	St. James ..	1482	4.80
James (Duston	538	4.74		Far Cotton ..	908	4.50
Far Cotton ..	908	4.50	957	St. Edmund	1864	4.88
Abington ..	1119	4.66	328			
Total ..	17602	4.94	17935		17602	4.94

NATURAL INCREASE OF POPULATION.—This is the excess of the births over the deaths during the year. In 1904 this excess was 917, in 1903, 985.

The following table shows this increase for the ten years 1894—1903, and also for 1904.

Year.	Population.	Births.	Deaths.	Natural Increase of Population.	Natural Increase per 1000
1894	61057	1851	908	943	15.4
1895	61072	1926	913	1013	16.6
1896	61087	1799	979	820	13.4
1897	61102	1752	1042	710	11.6
1898	61117	1694	995	699	11.4
1899	61132	1671	921	750	12.3
1900	61147	1546	951	595	9.7
1901	87021	2345	1216	1129	13.0
1902	88206	2272	1294	978	11.1
1903	89960	2194	1219	985	10.9
1904	90340	2102	1185	917	10.15

BIRTH RATE.—The births registered during the year amounted to 2,102; of these 1,066 were of males, and 1,036 of females

The birth-rate was 23.3. This is the lowest rate yet recorded, being 1.1 lower than the birth-rate of 1903 and 4.4 lower than the average birth-rate of the decennium 1894—1903.

The births registered in the registration district of St. Giles amounted to 1,134, in that of All Saints, St. James, and Kingsthorpe to 828, and in Far Cotton to 140.

There were 37 illegitimate births registered in the St. Giles district, or 3.26% of the total births registered there. In the district of All Saints, etc., there were 13 illegitimate births, or 1.58% of the total births registered there. This figure is not quite accurate, as the illegitimate births have only been distinguished in this district since March, 1904. The figure for Far Cotton has not been supplied.

“ The birth-rate in England and Wales in 1904 was 27.9 per 1,000 of the population, which is 0.5 per 1,000 below the rate in 1903, and lower than the rate in any other year on record ; compared with the average in the ten years 1894—1903, the birth-rate in 1904 shows a decrease of 1.3 per 1,000.”—*Registrar General*.

Annual Rate per 1,000 of Births in the Years 1894—1904 :—

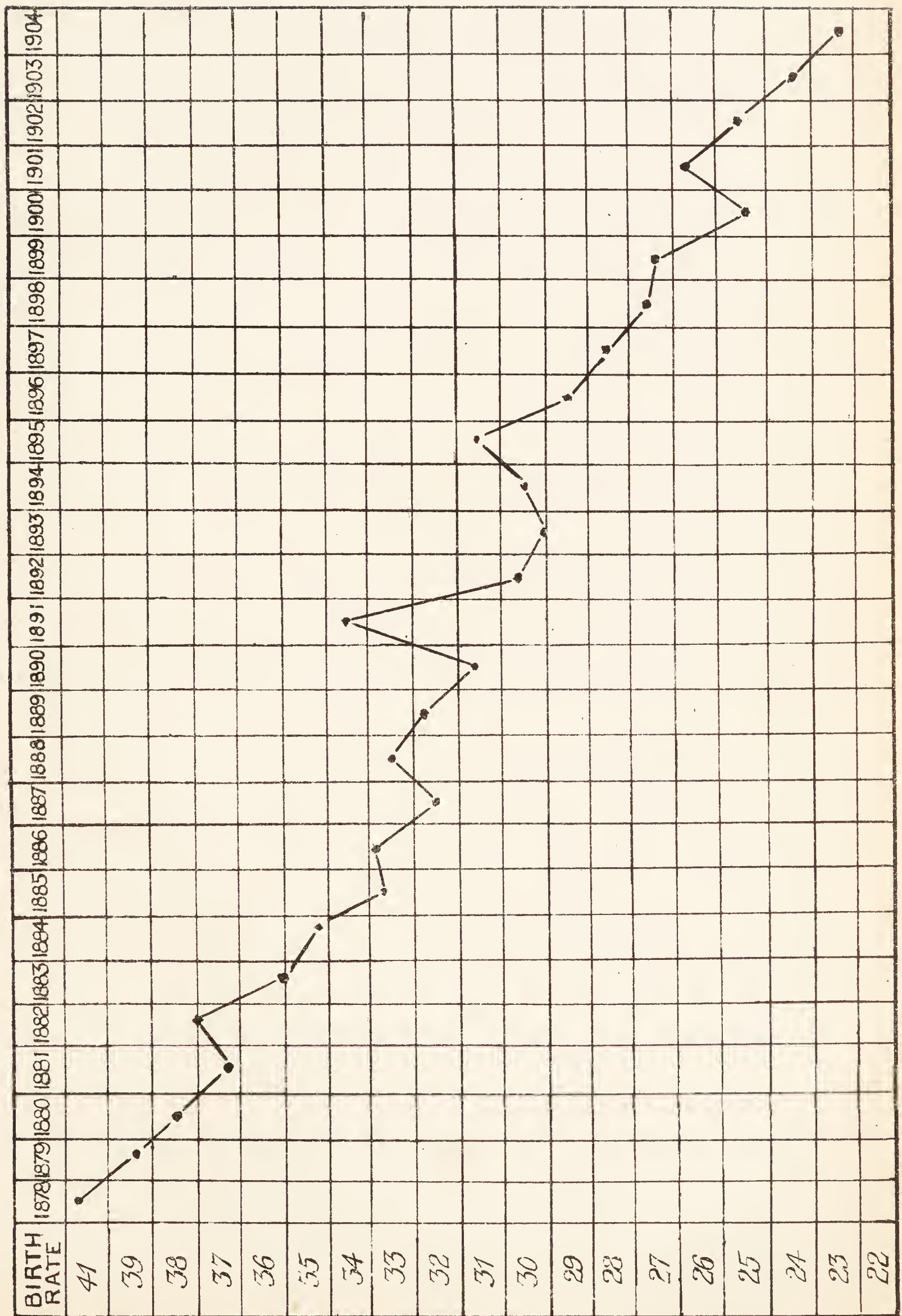
	1894.	1895.	1896.	1897.	1898.	1899.	1900.	1901.	1902.	1903.	1904.
England and Wales	29.6	30.3	29.6	29.6	29.3	29.1	28.7	28.5	28.6	28.4	27.9
Northampton	30.3	31.5	29.4	28.6	27.7	27.3	25.2	26.9	25.7	24.4	23.3

In my last report I drew attention to the very remarkable diminution of the birth-rate in Northampton. That the birth-rate is still rapidly diminishing is shown by the above figures and by the accompanying chart of the birth-rate for the years 1878—1904. I also gave figures showing that this was due not to any decrease in the marriage rate during the decennium 1891—1901, but to a decrease in the fertility of marriage. This is not confined to Northampton, but is general throughout the country. Here, however, it is plainly present in an accentuated form. In his recently published report for the year 1903 the Registrar-General makes the following comparisons and comments —

“ The mean birth-rates in England and Wales at the four last census periods, calculated on the total population, were as follows :—

Three Year Periods.				Year.
1870—2.	1880—2	1890—2.	1900—2.	1903.
35.3	34.0	30.7	28.6	28.4

“ The total population is not, however, the most satisfactory standard by which to measure the birth-rate, because it does not take account of the age constitution of the population, and particularly the age constitution of the female population of conceptive age. For instance, the proportion of women aged 15—45 to the total population in England and Wales, which was 23.1 per cent. in 1871 and in 1881, rose to 23.8 per cent. in 1891, and further increased to 25.0 per cent. in 1901 ; if, therefore, the average fecundity of the female population at these ages had remained constant, the birth-rate in proportion to the total population would have increased during the past 30 years



by nearly 2 per cent. ; stated in another way, had the ratio of births to the female population of conceptive ages been identical in 1871 and in 1903 the births registered in the latter year would have amounted to upwards of one and a quarter millions instead of the 948,271 actually recorded.

“On the other hand, in the period under review, the female population aged 15—45 years, contained a constantly decreasing proportion of married women ; further, among these married women the proportion of those at ages under 25 years has continuously decreased. Thus, if the total number of married women (15—45 years) the proportion of those aged 15-25 years was 15.2 per cent. in 1871, 14.8 per cent. in 1881, 13.7 per cent. in 1891, and as low as 12.4 per cent. in 1901.

“In view of these facts it is evident that a preferable method by which to measure the birth-rate is to calculate the proportion of births per 1,000 women of conceptive age.

“If this method be adopted, it is desirable to carry the analysis further and to ascertain also the proportion of legitimate births per 1,000 married women and the proportion of illegitimate births per 1,000 unmarried and widowed women of conceptive age. The rates resulting from these calculations are as follows :—

Proportion of Total Births per 1,000 women aged 15—45 years :—

Three Year Periods.				Year.
1870—2.	1880—2.	1890—2.	1900—2.	1903.
153.7	147.7	129.7	114.8	113.8

Proportion of Legitimate Births per 1,000 married women aged 15—45 years :—

Three Year Periods.				Year.
1870—2.	1880—2.	1890—2.	1900—2.	1903.
292.5	286.0	263.8	235.5	233.3

Proportion of Illegitimate Births per 1,000 unmarried and widowed women aged 15—45 years :—

Three Year Periods.				Year.
1870—2.	1880—2.	1890—2.	1900—2.	1903.
17.0	14.1	10.5	8.5	8.4

“This method of measuring the birth-rate shows the amount of decrease to be far greater than is shown by the rates based on the total population.”—*Registrar General—Sixty-sixth Annual Report*.

It is obvious that the second of these tables is an application to the whole country of the method I applied last year to Northampton, for the result then showed that “where 100 families produced on the average 26 children in 1891, 100 families of similar age produced in 1901 only 22 children,” or to make the figures comparable with those of the Registrar-General, in 1891, 1,000 families produced 263.5 children (England and Wales, 263.8), but in 1901, 219.8 children (England and Wales, 235.5).

It remains to complete the comparison by basing the calculation on the total number of women of conceptive age 15—45.

Proportion of Total Births per 1,000 women aged 15—45 years :—

					1891.		1901.
England and Wales	..	..	..	..	129.7	..	114.8
Northampton	..	..	..	..	128.8	..	111.8

Proportion of Births per 1,000 married women aged 15—45 years :—

					1891.		1901.
England and Wales	..	..	..	..	263.8	..	235.5
Northampton	..	..	..	..	263.5	..	219.8

N.B.—In this table, illegitimate births are included with legitimate so far as Northampton is concerned.

The diminution of the birth-rate is therefore progressing at an accelerated rate in Northampton as compared with the rest of the country.

MARRIAGES.—I am indebted to the kindness of Mr. W. Fawkes, Clerk to the Guardians, for the following figures. They apply to the Borough, exclusive of Far Cotton. I have endeavoured to obtain the Far Cotton figures, but so far I have not been successful.

Year.				Marriages.
1901	..	..	..	680.
1902	..	..	..	644.
1903	..	..	..	648.
1904	..	..	..	612.

The diminution in the number of marriages in 1904 is most striking, and is probably connected with depressed trade conditions.

DEATH RATE.—The accompanying chart shows that the condition of the town in this particular is one of satisfactory progress. This is remarkable, as during the year Northampton has been suffering from an exceptionally severe epidemic of scarlet fever; and diarrhœa has claimed an unusually large number of victims.

The number of deaths which occurred during the year was 1185. This figure is obtained by subtracting from the total number reported, 108 deaths of non-residents, and adding 9 of patients belonging to the district who died in the Borough Hospitals. Of the 1,185 deaths recorded, 579 were of males and 606 of females.

The death-rate was 13.1 per 1,000; this is less by 0.4 than the death-rate of 1903, and 2.1 below the average annual rate for the years 1894—1903. The rate for 1904 is the lowest on record, but it should be remembered that it is strictly comparable only with the rates of the years 1901, 1902, and 1903, for the addition of the outlying districts has had, owing to their low mortality in comparison with the old borough, a favourable influence on the death-rate.

The following are the deaths and death-rates in the Wards. These figures have been corrected by the distribution of the deaths in the General Hospital, the Workhouse, and the Borough Hospitals, to the districts from which the patients came so far as possible. In certain of the deaths in the General Hospital this has not been possible, as the patient had either no home or his true address was not ascertained. In the case of Workhouse deaths the distribution applies only to those who entered the Workhouse within the year of their deaths, other deaths have been attributed to St. Michael's Ward, in which the Workhouse is situated.

Number of deaths and death-rates in the various Wards :—

WARD.				Deaths.	Death-rate.
St. Michael	..	..	..	182	12.95
Castle	..	..	..	165	15.78
St. Crispin	..	..	..	156	13.95
South	..	..	..	107	14.23
North	..	..	..	195	13.85
Kingsthorpe	..	..	..	104	11.01
St. James	..	..	..	100	12.33
Far Cotton	..	..	..	63	13.47
St. Edmund	..	..	..	126	11.06
Borough	..	..	..	1185	13.12

“The death-rate in England and Wales in 1904 was 16.2 per 1,000, which is 0.8 per 1,000 above the rate in 1903; compared with the average rate in the ten years 1894—1903, the death-rate in 1904 shows a decrease of 1.0 per 1,000.”—*Registrar-General*.

Annual death-rate per 1,000 from all causes during the year 1904 :—

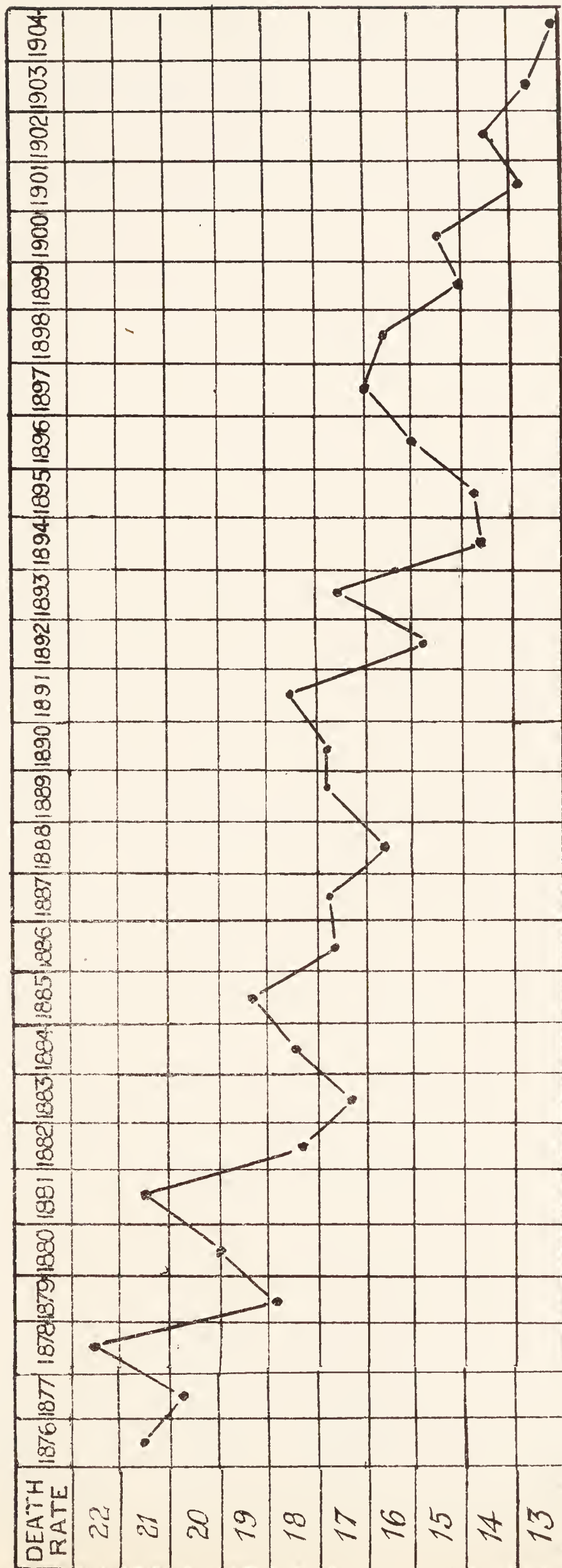
England and Wales	..	..	..	..	..	16.2
76 Great Towns	..	..	..	..	..	17.2
142 Smaller Towns	..	..	..	..	..	15.6
England and Wales (less the 218 towns)	..	..				15.3
Northampton—On the total deaths registered	..					14.3
On net deaths	..	..	..			13.1
“Corrected,” total deaths	..					14.8
“Corrected” net deaths	..	..				13.6

CORRECTED DEATH RATE.—In order to make the death-rate of a town strictly comparable with that of England and Wales, a certain correction must be made. It has been found that in towns there are more young people than in populations of similar size taken at random from the country as a whole, this difference being especially noticeable if the towns are compared with rural districts. To overcome this difficulty, the Registrar-General has published a series of factors, one for each town, based on the last census returns. The factor for a town when multiplied into the death-rate of that town ascertained in the usual way gives the “corrected” death-rate, or death-rate which the town would have had if its age and sex distribution had been the same as in the country generally. The factor for Northampton is 1.0376. This corrected death-rate is 13.6, a difference of slight importance.

OBSCURE DEATHS.—The following tables explain themselves :—

Deaths certified by Coroner (causes and ages).

			under 1	1-5	5-15	15-25	25-65	65 & upwds.	Total.
Pneumonia	..	..	—	—	—	—	1	1	2
Apoplexy	..	..	—	—	—	—	—	2	2
Accidents	..	..	5	8	2	1	8	2	26
Suicides	..	..	—	—	—	—	17	1	18
Heart Disease	..	..	—	—	1	1	9	—	11
Convulsions	..	..	2	—	—	—	—	—	2
Pleurisy	..	..	—	1	—	—	—	—	1
Other Causes	..	..	2	1	1	—	2	2	8
Total	..	..	9	10	4	2	37	8	70



Uncertified Deaths (causes and ages).

	under 1	1-5	5-15	15-25	25-65	65 & upwds.	Total.
Senile Decay	—	—	—	—	—	2	2
Convulsions	4	1	—	—	—	—	5
Diarrhœa	1	—	—	—	—	—	1
Premature Birth ..	7	—	—	—	—	—	7
Heart Disease	—	—	—	—	1	1	2
Apoplexy	—	—	—	—	1	—	1
Bronchitis	—	—	—	—	—	1	1
Other Causes	5	—	—	—	—	—	5
Total	17	1	—	—	2	4	24

It is unfortunate that any death should be allowed to go uncertified by either a medical man or the Coroner. It is exceedingly doubtful that any reliance can be placed on the causes given for uncertified deaths. That so many deaths of children under twelve months are allowed to be registered without the certificate of a medical man or enquiry by the Coroner is a temptation to the unscrupulous when undesired children are born.

INFANT MORTALITY RATE.—This expression means the rate of deaths among children under twelve months of age per 1,000 births. During the year 279 deaths were registered of these infants, and as there were 2,102 births the rate is 132.7. This rate is lower by 4.5 than the rate in 1903, and is lower than that of any year since 1878 except the years 1883 and 1902.

“The rate of mortality among infants under one year of age to 1,000 registered births was 146, and is 9 per 1,000 below the mean for the ten years 1894—1903.”—*England and Wales, Registrar-General.*

FOREIGN AND HOME RATES.

Average of 1893—1902				Average of 1893—1902.			
Chili .. ..	..	..	333	Switzerland .. ..	..	..	145
Russia .. ..	..	..	272	Denmark .. ..	..	..	133
Hungary .. ..	..	..	224	Scotland .. ..	..	..	127
Prussia .. ..	..	..	199	New South Wales ..	..	..	111
Italy .. ..	..	..	173	Victoria .. ..	..	..	109
Jamaica .. ..	..	..	171	South Australia ..	..	..	106
Ceylon .. ..	..	..	170	Ireland .. ..	..	..	104
France .. ..	..	..	158	Queensland .. ..	..	..	103
Belgium .. ..	..	..	157	Sweden .. ..	..	..	99
England and Wales ..	..	..	152	Norway .. ..	..	..	94
The Netherlands ..	..	..	152	Tasmania .. ..	..	..	93
Western Australia ..	..	..	146	New Zealand .. ..	..	..	82

The above table has been taken from the Sixty-sixth Annual Report of the Registrar General.

Table showing the Infant Mortality Rates for the years 1878—1904, and the Birth-rates for the same years.

Year.	Birth-rate per 1,000 of the Population.		Deaths of Infants per 1,000 Births.
1878	..	41.3	.. 188.4
1879	..	39.2	.. 139.7
1880	..	38.6	.. 149.6
1881	..	37.2	.. 150.3
1882	..	38.0	.. 161.8
1883	..	36.0	.. 132.2
1884	..	35.2	.. 186.3
1885	..	33.6	.. 155.1
1886	..	33.9	.. 153.5
1887	..	32.4	.. 174.8
1888	..	33.5	.. 146.3
1889	..	32.9	.. 176.4
1890	..	31.7	.. 174.7
1891	.	34.5	.. 164.2
1892	.	30.6	.. 145.4
1893	.	30.0	.. 173.1
1894	..	30.3	.. 136.1
1895	..	31.5	.. 145.8
1896	..	29.4	.. 150.6
1897	..	28.6	.. 184.3
1898	..	27.7	.. 181.2
1899	..	27.3	.. 151.4
1900	..	25.2	.. 144.8
1901	..	26.9	.. 142.4
1902	..	25.7	.. 132.4
1903	..	24.4	.. 137.2
1904	..	23.3	.. 132.7

It is satisfactory to be able to record that Northampton is maintaining a satisfactory position in this direction, as compared with its own previous record, and with the record for the whole country, but the rate is still both here and elsewhere higher than it ought to be. A comparison with the records of other towns given in a comparative table on a later page shows that while Northampton stands well above the middle of the list, there are several towns where the rate is decidedly lighter. It is therefore important to study the causes of infant mortality to discover how far it is possible to reduce the rate still further. Last year I traced the causes, so far as these were obtainable, from the death returns, and this year I again give a study based on these. This year, however, I am able to give much additional information for the first time as the Health Visitor, Miss Gough, has investigated a great number of these deaths, and has obtained a great amount of valuable information.

The first two tables have been obtained by an analysis of the death returns ; one shows the most usual causes of death among infants during the last eleven years, the other gives a complete list of the causes of death among infants during 1904, showing the dates in months after birth at which the deaths took place—in the case of the first month showing also the dates in weeks.

A comparison of the eleven years shows that the main causes of death fall under these headings. The diarrhoea and enteritis figures should be added together, as the difference between these diseases is mainly one of classification.

Before examining the figures in detail it is important to remember that a high mortality is to be expected at the extremes of life. In the young, because many children, when born, are not capable of continued life, in the old, because the springs of life are drying up. The following table shows the death rates at various periods of life in Northampton for the year 1904, assuming that the age distribution of the population was the same as in 1901.

	Estimated Population, 1904.	Death-rate.
Under one year	2125 (births 2102)	132.73
1 and under 5	8364	15.06
5 and under 15	19947	2.51
15 and under 25	18327	3.27
25 and under 65	37792	9.23
65 and over	3785	84.80
Total	90340	13.12

	1894	1895	1896	1897	1898	1899	1900	1901	1902	1903	1904
Marasmus, Debility, and Atrophy	55	79	65	61	70	54	48	?	63	55	54
Convulsions	37	31	35	33	21	30	15	?	?	29	29
Bronchitis and Pneumonia ..	38	33	41	54	26	39	45	30	51	56	26
Whooping Cough	16	4	5	30	10	7	7	19	12	14	2
Measles	4	..	18	1	15	1	5	1	10	4	1
Premature Birth	43	33	33	49	47	34	25	53	40	52	55
Diarrhoea	14	58	27	36	55	51	28	65	26	24	56
Enteritis and Gastritis	9	7	8	16	3	..	..	20	20	23	4
All other causes	36	36	39	43	60	37	51	147	79	44	52
TOTAL	252	281	271	323	307	253	224	335	301	301	279
TOTAL BIRTHS	1851	1926	1799	1752	1694	1671	1546	2345	2272	2194	2102
Infant Mortality Rate	136.1	145.8	150.6	184.3	181.2	151.4	144.8	142.4	132.4	137.2	132.7

DISEASES.		1 and 8 under 8 days	8 and under 15 days	15 & under 22 days	22 & under 1 mon.	1 & under 2 mon.	2 & under 3 mon.	3 & under 4 mon.	4 & under 5 mon.	5 & under 6 mon.	6 & under 7 mon.	7 & under 8 mon.	8 & under 9 mon.	9 & under 10 mon.	10 & under 11 mon.	11 & under 12 mon.	Total
1.	Marasmus ..	..	2	7	2	9	10	6	3	3	2	..	3	..	2	..	49
2.	Atrophy ..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1
3.	Convulsions ..	8	3	1	..	2	2	..	1	3	1	3	..	..	3	2	29
4.	Pneumonia ..	..	..	1	..	..	2	1	2	2	1	2	1	2	..	3	17
5.	Bronchitis ..	..	..	1	..	2	..	..	1	1	2	..	..	..	..	2	9
6.	Pertussis ..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	2
7.	Measles ..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	1
8.	Scarlet Fever ..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1
8a.	Septicaemia ..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1
9.	Meningitis ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
10.	Tubercular Meningitis ..	..	..	..	..	..	..	..	1	1	..	3	2	1	1	..	8
11.	Tuberculosis ..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	1
12.	Premature Birth ..	..	..	1	1	1	1	..	..	..	..	..	..	..	..	..	1
13.	Imperfect Circulation ..	51	..	..	..	..	..	..	..	..	..	..	..	..	..	..	55
14.	Pulmonary Collapse ..	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4
15.	Deficient Vitality ..	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5
16.	Debility ..	6	1	..	1	..	..	..	..	..	..	..	..	..	..	..	8
17.	Congenital Heart Disease ..	1	..	1	..	1	..	..	..	..	..	..	..	..	..	..	4
18.	Syncope ..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
19.	Atelectasis ..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1
20.	Cyanosis ..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
21.	Diarrhoea ..	..	..	..	3	4	1	6	3	6	3	3	2	3	3	1	38
22.	Enteritis ..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	2
23.	Gastritis ..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1
24.	Gastro Intestinal Catarrh ..	..	..	..	1	4	2	..	..	1	4	1	4	..	..	..	19
25.	Chronic Gastro Enteritis ..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1
26.	Eczema, Septic Absorption ..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1
27.	Ulcerative Dermatitis ..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1
28.	Erythema ..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1
29.	Accident—Suffocated ..	1	..	..	..	3	..	..	..	..	..	..	..	..	..	..	4
30.	" Overlaid ..	..	..	..	..	1	..	3	..	..	..	..	..	..	..	..	4
31.	Accidental Death ..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1
32.	Hydrocephalus ..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1
33.	Rickets ..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1
34.	Abdominal Abscess..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1
35.	Want of Breast Milk ..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1
36.	Natural Causes ..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	..	2
TOTALS ..		78	7	12	10	30	21	18	14	18	18	12	16	7	9	9	279

An examination of the detailed table of diseases attacking infants during 1904 shows that these may be divided into diseases unavoidable under present conditions, and diseases more or less avoidable.

A.—Diseases unavoidable under present conditions :—

Developmental diseases, Nos. 12 to 20, except 16	..	..	76
Specific fevers, Nos. 6 to 8	..	..	2
The tuberculosis group, Nos. 9 to 11	..	..	10
Miscellaneous, Nos. 26 to 36	..	..	18
Deaths under one month not previously included	..		32
			<hr/> 138

The specific fevers and tuberculosis are included because it is to be expected that these diseases, affecting the whole population as they do, will cause a certain number of deaths among infants. The same is true of the miscellaneous group. Children under one month old may be considered incapable of opposing much resistance to disease.

B.—Diseases more or less avoidable :—

Diseases probably connected more or less directly with feeding,					
Nos. 1, 2, 16, 21 to 25	..	..	..	..	97
Diseases of the lungs, Nos. 4—7	..	..	..	..	27
Doubtful diseases, No. 3	..	..	..	..	17
					<hr/> 141

In all the above deaths under one month have been excluded. Measles and whooping cough are classed with diseases of the lungs, as it is from lung complications in these diseases that patients as a rule die.

Convulsions is considered “doubtful,” as a convulsion is a symptom of disease not a disease in itself.

There has been an important reduction in the mortality from lung diseases during the year. The figure 27 compares very favourably with the figure 71 in 1903. The reduction is due mainly to a reduction in the number of cases of pneumonia and bronchitis, and only to a minor degree to the reduction in the number of cases of measles and whooping cough.

Diseases probably connected with improper feeding amount to nearly 35% of the whole, or to 46.1 of the total mortality of 132.7. Such a mortality demands examination, as it is preeminently the line along which the question of infant mortality should be attacked.

So far the question has been discussed wholly from an analysis of the death returns, but fortunately other information is at our disposal this year for the first time. Throughout the year Miss Gough has carried out investigations into the deaths of infants, neglecting those under one month old at death and those who died from some of the causes in the miscellaneous group.

In all she investigated 143 of these deaths, recording her notes on forms, a specimen of which was given last year in the Annual Report.

The 143 cases covered the following diseases :—

Marasmus	..	..	..	35	Diarrhœa	..	..	..	31
Convulsions	..	..	..	12	Enteritis	..	..	..	2
Pneumonia	..	..	..	12	Gastritis	..		..	1
Bronchitis	..	..	..	9	Gastro intestinal catarrh	..		..	21
Whooping cough	..	..	..	1	Chronic gastro enteritis	..		..	1
Measles	..	..	..	1	Ulcerative dermatitis	..		..	1
Meningitis	..	..	..	6	Erythema	..	..	..	1
Tubercular meningitis			..	1	Hydrocephalus	..		..	1
Tuberculosis	..	..	..	1	Rickets	..	..	..	1
Congenital debility	..	..	..	1	Abdominal abcess	..		..	1
Syncope	..	..	..	1	Natural causes	..		..	2

A considerable amount of tact and discretion was necessary in making the enquiries, as a proportion of the mothers seemed to fear that the enquiries were being made owing to an idea that they had neglected their children. In nearly all cases the information required was obtained.

On an analysis of these reports, it was found that 17 of the 35 cases of marasmus, *i.e.*, wasting, were accompanied by, and apparently due to diarrhœa. This was true also of two cases of convulsions, and of two of pneumonia. On the other hand, no history of diarrhœa could be obtained in one case of enteritis, but the history pointed to pneumonia. The list of diseases has therefore, for the purposes of the following tables been revised along these lines. Diarrhœa, enteritis, gastritis, and gastro-intestinal catarrh have all been reckoned under the general head diarrhœa.

The following table shows the period of the year when the principal diseases mentioned were most rife.

			Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
Marasmus	..	..	1	3	5	1	2	1	—	—	2	2	—	1	18
Convulsions	..	..	1	4	1	2	—	—	—	2	—	—	—	—	10
Pneumonia	..	..	2	—	1	—	—	—	—	1	1	1	3	2	11
Bronchitis	..	..	—	—	1	—	—	—	—	—	1	1	4	2	9
Meningitis	..	..	—	—	—	2	—	1	—	2	—	—	1	—	6
Diarrhœa	..	..	1	5	2	4	1	—	7	35	16	1	2	1	75

The numbers given are rather few in most of the cases to draw any safe inferences from, but allowing for this it seems probable that marasmus, apart from diarrhœa occurs indifferently at any season, the same being true of meningitis. Probably if there were more cases recorded, a similar result would be found to be true in cases of convulsions, though the early months of the year show a greater mortality in the above table. As was to be expected, pneumonia and bronchitis are worse in the winter months, November, December and January accounting for 13 of the 20 deaths recorded. Diarrhœa, on the other hand is essentially a late summer and early autumn disease.

As the subject of diarrhœa will be treated by itself at a later stage I will not refer to it further at present, except to point out that it was the cause of death in more than one half of the cases investigated.

The following table gives the character of the feeding and of the physique and surroundings of the cases :—

DISEASE.	FEEDING.			BOTTLE.		Milk boiled.	PHYSIQUE.			HOUSE.				Mother weak.	Total number of cases.
	Breast fed.	Breast first, later, bottle.	Bottle fed.	Long tube.	Boat shape.		Good.	Fair.	Poor, or Puny.	Clean.	Dirty.	Comfortable	Poor.		
Marasmus ..	11	2	5	7	—	6	4	2	12	17	1	9	9	3	18
Convulsions ..	3	4	3	5	2	4	4	1	5	9	—	6	3	2	10
Pneumonia ..	7	3	1	4	—	2	5	—	6	10	1	5	6	—	11
Bronchitis ..	5	3	1	3	2	1	5	1	3	8	1	7	2	1	9
Meningitis ..	2	2	2	3	—	—	2	2	2	6	—	4	2	2	6

The figures at our disposal are much too small to render the inferences which may be drawn from them more than provisional ; allowing for this, however, a certain number of conclusions seem to follow.

Marasmus, or wasting disease, does not depend on the method of feeding for a majority of the infants were breast fed, nor upon the character of the house, for 17 of the 18 houses were clean and half of them were comfortable, nor does it depend on the state of the mother's health, for this is recorded as poor in only three cases. On the other hand, it does depend largely on the child's physique, as 12 of the 18 cases had a poor or puny physique. As this is congenital quality, it may be stated that in most of the cases of marasmus the child comes into the world handicapped.

Convulsions.—No inference whatever can be drawn in this case, except the negative one, that none of the circumstances given had any appreciable influence. This was to be expected, as convulsions are due to many different causes.

Pneumonia and bronchitis.—No inference can be drawn, and the same is true of meningitis.

The table shows, however, one or two general points of interest; first, the prevalence of the utterly unhealthy type of bottle described as the "long tube"; this refers to the long rubber and glass tubes which accompany it. These tubes it is almost impossible to clean properly, and a long time must be spent in the cleansing. As this should be done at once after each meal, and as a meal should be given every 2-3 hours, there can be little doubt but that it is rare to find the bottle properly kept. Considering that a remarkably good feeding-bottle can be made out of an ordinary medicine bottle if a wide teat to cover its mouth be obtained from any chemist for a few pence, and that such a bottle and teat are easily and quickly cleaned, there is no excuse save that of indolence for a mother using the long tube variety. The sole advantage of the latter is that the child can be left to feed itself, while with the former the mother must hold the bottle while the child is taking its milk.

Next, it is striking how widely spread is the knowledge that milk, as sold under ordinary conditions, should be boiled. The object, of course, is to make it keep longer, but it has the additional advantage from the hygienic point of view, that boiling destroys not merely the bacteria which cause souring, but also those which cause disease.

Lastly, the diseases mentioned do not appear to depend on filth. It is remarkable how few houses were found dirty and in how many the circumstances of the household appeared comfortable.

There is some evidence in the case of pneumonia, bronchitis, and meningitis, that infection played a part in spreading these diseases, but I prefer not to press the point till further information is available.

The following figures referring to the feeding of the 143 children seem worth putting on record :—

Breast-fed entirely	31	Milk used—Cows' Milk ..	84
Breast-fed, later bottle-fed ..	51	Condensed milk—	
Breast-fed and sops	16	“ Milkmaid ” brand ..	11
Bottle-fed entirely	45	“ Nestlé's ”	12

Types of bottle used :—

Boat-shape	19	Patent foods used ..	31
Long-tube shape	77	Sops given under one month	6
		„ „ „ 6 months	15

Generally speaking, the bottles were said to be cleansed in hot water, or in hot water and soda, rinsed, and kept in clean cold water till again required. In two cases it was said that the tubes were cleaned with a rag and a hat pin !

The following instructions on infant feeding are distributed by the Health Visitor, and the Registrars of the various districts have also been kind enough to undertake to give a copy to every person registering a birth.

DIRECTIONS FOR THE FEEDING OF INFANTS.

BREAST FEEDING.

There is no food for an infant which is nearly so good as its mothers' milk. The infant should be fed on this alone for at least six months, and if possible, for nine months, when it should be weaned. Patent foods should never be given before this age, except on the advice of a doctor.

The infant should not be put to the breast merely because it cries ; its cry may be due to the pain of indigestion, when this is so, the warm milk will relieve the pain for a few minutes, but the child will then be as bad or worse than ever. It is important that the child should have the breast at regular intervals ; during the first month, every two hours, with an interval of six hours at night. An extra feed may be allowed for very weakly infants during the night. Should the child cry during the night or in the intervals

between the feedings, give it a teaspoonful or two of hot water. The child should be fed slowly, each feeding extending over 15-20 minutes ; too rapid suckling is likely to cause vomiting or indigestion.

During the second month, the child should be fed every two and a half hours.

During the third month it should be fed every three hours.

WEANING.—Suckling should never be continued beyond twelve months, except on special medical advice ; as a rule, it is advisable to begin weaning when the child is nine months old. Unduly prolonged suckling is bad both for the mother and the child. It is not true that a woman will not have another child as long as she is suckling. Weaning must take place gradually, the process should last three or four weeks.

During the first week, the child should have one feed of milk and barley water, prepared, as will be described later, for infants six to nine months of age, in the morning, instead of the breast.

During the second week two such feeds, one in the morning and one in the evening.

During the third week, milk so prepared may be given at every other feed.

During the fourth week, the breast should be given only once a day, in the early morning.

THE MOTHER.—In order to supply wholesome milk to her child, should live quietly, and take her meals at regular intervals. She should avoid hard work, but may do most of the ordinary house-work. Moderate exercise in the open air should be taken. She should take more food than at other times, this can be best secured by taking in addition to the usual meals a small meal in the middle of the morning and a light supper before going to bed. This is better than to take more food at the three regular meals. The food should be plain and wholesome ; indigestible food, such as new bread, pickles, pastry, pork, cheese, etc., should be avoided, and tea taken only in moderation. An extra pint of milk a day is generally necessary. Stimulants, such as beer and spirits, are unnecessary. Spirits should not be taken at all, but light bottled ale may be taken if desired.

HAND-FEEDING.

The milk required should be obtained twice a day, in warm weather, especially.

N.B.—The child's stomach is very small, so be careful not to give too much food at a time.

FIRST MONTH.—*Directions for making a whole day's supply*—Dissolve 8 lumps of sugar in a pint of water, add to this half a pint of new milk, and boil; cool quickly by letting the vessel containing the milk stand in cold water.

For use, take :—

First week.—2 tablespoonfuls, bring to the boil, cool to a suitable heat, and add one teaspoonful of lime water.

Second week.—2 tablespoonfuls and 1 dessertspoonful.

Third week.—3 tablespoonfuls.

Fourth week.—3 tablespoonfuls and 1 dessertspoonful.

To each feed, add one teaspoonful of lime water as in the first week.

Give the feeds every two hours during the day, with a six hour interval at night.

If lime water be not used, then to the pint and a half mixture of sugar water and milk add as much bi-carbonate of soda (baking soda, not washing soda, which is injurious) as will stand on a sixpence.

This diet is very poor in cream, therefore if cream be obtainable, 3-4 tablespoonfuls should be added to the pint and a half mixture of milk and water.

NOTE.—Cream can be obtained by purchasing a pint or more of milk in addition to the milk required by the child; this should be placed in a shallow earthenware bowl, thoroughly clean, which should be placed in a basin of water for coolness, and covered with a plate. The cream should be skimmed off after 10-12 hours. The skim milk should not be used for the child, but it can be used by the rest of the household. A pint of milk should yield 3-4 tablespoonfuls of cream. If the milk is found to be of poor quality, the Health Office should be informed, when an investigation will be made.

If, for any reason, cream is not added to the milk mixture, the child must have half-a-teaspoonful of cod liver oil twice a day.

A good deal of the mixture will be left over at the end of the day, this must not be used during the second day for the child, but it can be used for the rest of the household. It is better to get fresh milk twice daily, and make only half the quantity of the mixture at a time, by dissolving four lumps of sugar in half-a-pint of water, and then adding a quarter pint of milk (and 1-2 tablespoonfuls of cream if possible).

SECOND MONTH.—The strength of the milk should be increased. Dissolve 10 lumps of sugar in a pint of water, add a pint of milk and 3-4 tablespoonfuls of cream, and if limewater be not used, baking soda as before. For use, take 5 tablespoonfuls, bring to the boil, and cool to a suitable temperature. If lime water be used instead of baking soda, then add 3 teaspoonfuls of lime water to each feed. The child should be fed every two and a half hours, with a six hour interval at night. As before, cod liver oil, half a teaspoonful twice daily must be given if cream is not added to the mixture.

TWO TO SIX MONTHS.—Dissolve 8 lumps of sugar in a pint of barley water, add a pint of milk and 3-4 tablespoonfuls of cream, boil, cool quickly.

NOTE.—Neither baking soda nor lime water are now to be used.

For use take 6 tablespoonfuls, increasing to 8 or 9, as the child grows.

Cod liver oil as before if cream is not added to the mixture. Feed every three hours except at night.

SIX TO NINE MONTHS.—Use the same mixture, giving 10 tablespoonfuls, increasing to 12 as the child grows. Cod liver oil as before if cream is not used.

Notes on the Preparation of the Feeds.

HEATING.—*The Saucepan.*—The best saucepan is the double saucepan, where an enamelled saucepan fits into another larger one containing water. It is desirable, especially in hot weather, that as advised above, the whole mixture should be boiled when first made, and that each feed should be brought to the boil before being given.

STORING MILK.—Milk and milk mixture should be stored in jugs, freshly cleaned out thoroughly with boiling water, the jug should be covered, allowed to stand in cold water, and kept in a cool place, not in the living room, and not near the sink or the drain opening. Remember that it is best to make the mixture twice in the day with fresh milk, and not make the whole 24 hours' supply at once.

CONDENSED MILK.—This is not to be recommended, but when it is used, mothers should be careful to get only the best brands, and the unsweetened milk should be preferred. They should carefully examine the labels on the milk tins, and brands made of " machine made milk " or " skimmed milk " should be rejected. The milk should be diluted according to directions given on the tin. The open tin should be kept in a cool place, covered.

THE BOTTLE.

The bottle most commonly used has a rubber tube attached to a glass tube, passing through the cork to the bottom of the bottle ; there is a rubber teat at the other end as a mouthpiece. *This kind of bottle should on no account be used ;* it is very difficult to keep clean, especially in hot weather particles of milk stick to the sides of the tubes and decompose, this decomposition infects all the food taken, and is a fruitful source of diarrhoea. The only advantage of this bottle is, that it saves the mother or nurse a little trouble at the meal times ; the nipple can be put in the child's mouth, and the child left to suck without supervision. Those who use the bottle, as a rule, regulate neither the amount given at each feed nor the intervals between the feeds. The proper bottle to use is one where there are no tubes, but only a rubber teat covering the mouth of the bottle. One often used is boat-shaped. This bottle is easily cleaned, and the nipple can be taken off, turned inside out and scrubbed.

HOW TO FEED.—The mother or nurse must hold the bottle while the child is being fed ; at first the bottle must be held nearly level, and then gradually tilted, so as to keep the nipple full of milk, and prevent the swallowing of air. The child should not be allowed to take its food too rapidly ; 10-15 minutes should be spent, the bottle being taken away occasionally during the feeding to allow a breathing space.

Never allow sucking at an empty bottle or at a plain rubber teat known as a "comforter." These comforters are a fruitful source of flatulence and indigestion, and being dropped on dirty clothes or on the floor they are apt to convey particles of dirt to the child's mouth and thence to its stomach.

CLEANSING THE BOTTLE.—This is most important, a bottle brush being necessary. Every bottle after use must be washed out thoroughly in hot water, after first throwing away any milk left in the bottle, and then in soda water, afterwards rinsed out in boiled water, and kept in a basin of clean cold water till required. Before use again, rinse out in boiled water. The teat should also be turned inside out, scrubbed, and kept in water. It is better to have two bottles and use them alternately.

THE LATER MONTHS.

After weaning, or in the case of hand-fed children, from the tenth month onward, the child may have a little bread and milk, bread and butter, milk puddings, rusks, or one of the "infant's foods," beginning with very small amounts. After the first year, porridge, mashed potato and gravy, yolk of egg may be added. A little fish may be given after eighteen months. Meals must be given at fixed hours. Do not allow the child to eat between meals. See that the child eats slowly. The following must not be given: cakes, sweets, pastry, nuts, fruits, cheese, pickles, beer.

N.B.—If the infant does not thrive, or falls ill while taking any of the above diets, at once consult a medical man.

TO MAKE BARLEY WATER.—Put a teaspoonful of well-crushed barley, or of prepared barley in a jug, and pour on it half-a-pint of boiling water, add a pinch of salt, and stand it by the fire for an hour, stirring frequently; then strain through muslin. Make it fresh twice a day.

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Table showing the comparative mortality of Northampton with other towns of similar size.

NOTE.—In the other towns, the populations have been obtained from the Registrar-General's quarterly reports, but in the case of Northampton the population is that obtained in the way already described.

The figures given have been taken from the February number of "Public Health."

1904.	Population as calcu- lated by Registrar General.	Recorded Death Rate.	Corrected Death Rate.	Birth Rate.	Infant Mortality Rate.	DEATH RATES PER 1000 PERSONS FROM						
						Phthisis.	Enteric Fever.	Small- pox.	Measles.	Scarlet Fever,	Diph- theria.	Whoop- ing Cough.
Hornsey ..	81221	8.43	9.62	20.40	87.00	0.57	0.024	0.00	0.22	0.012	0.085	0.20
East Ham ..	116902	13.50	14.40	31.7	140.00	1.18	0.12	0.00	0.46	0.08	0.38	0.19
Walthamstow ..	111282	11.95	12.79	32.79	135.92	0.85	0.08	0.008	0.48	0.12	0.24	0.28
Southampton ..	112500	13.83	13.76	26.78	114.50	1.22	0.009	0.00	0.00	0.009	0.107	0.14
Reading ..	76373	13.89	14.39	25.87	133.00	0.90	0.04	0.00	0.01	0.03	0.19	0.05
Plymouth ..	114003	18.74	18.21	25.33	173.13	.	0.15	0.00	0.70	0.31	0.11	0.24
NORTHAMPTON	90340	13.12	13.61	23.27	132.73	1.15	0.00	0.01	0.01	0.44	0.10	0.04
Wolverhampton ..	98194	14.61	15.29	29.80	152.00	0.90	0.12	0.00	0.00	0.14	0.18	0.61
Coventry ..	73904	15.52	15.54	31.40	137.00	1.05	0.01	0.01	0.00	0.13	0.14	0.65
Stockport ..	97008	19.98	21.56	26.63	201.20	1.15	0.12	0.15	0.68	0.23	0.16	0.06
Birkenhead ..	114814	19.87	21.20	33.14	.	1.51	0.11	0.008	0.85	0.17	0.17	0.72
St. Helens ..	88545	20.39	22.10	37.33	174.00	1.58	0.12	0.03	1.47	0.17	0.24	0.55
Preston ..	115055	17.83	19.52	28.26	183.00	1.06	0.25	0.05	0.74	0.06	0.18	0.25
Huddersfield ..	94925	17.51	18.81	23.71	136.00	1.33	0.07	0.01	0.79	0.11	0.15	0.26
Halifax ..	107580	15.50	16.60	20.10	130.00	1.20	0.09	0.08	0.41	0.21	0.15	0.17
York ..	81268	16.18	16.66	28.15	170.00	1.34	0.17	0.01	0.17	0.38	0.17	0.28
Middlesborough ..	96684	19.94	20.00	37.12	170.	1.28	0.18	0.00	0.40	0.10	0.11	0.25
South Shields ..	107334	18.10	19.20	34.50	144.00	1.52	0.074	0.065	0.26	0.074	0.11	0.59
Newport ..	71543	15.70	17.00	32.7	149.60	0.96	0.07	0.00	0.027	0.13	0.11	0.36
Merthyr Tydfil ..	72745	19.7	20.86	38.50	186.00	1.20	0.25		0.10	0.23	0.22	0.45
Swansea ..	95931	17.70	18.90	30.50	172.00	1.46	0.05	0.00	0.00	0.14	0.24	0.99

CANCER AND OTHER MALIGNANT DISEASES.—The number of deaths registered was 67 and the rate of mortality 0.74. This is a lower rate than that in the years 1902 and 1903. The following table gives the figures for the years since 1894 :

Year.	1894.	1895.	1896.	1897.	1898.	1899.	1900.	1901.	1902.	1903.	1904.
Number of Cases	47	51	35	40	32	52	44	52	76	86	67
Rate	0.77	0.83	0.57	0.65	0.52	0.85	0.72	0.60	0.86	0.96	0.74

In the year 1903, according to the Sixty-sixth Annual Report of the Registrar-General, the disease exacted a death toll at all ages of 0.73 among males, and 1.00 among females in England and Wales.

TUBERCULAR DISEASES.—The tables for the year show that 104 deaths were due to pulmonary phthisis, these adding to the death-rate to the extent of 1.15.

The deaths from tubercular diseases other than pulmonary phthisis amounted to 40, the death-rate from this cause being 0.44 per 1,000 of the population.

The death-rate from phthisis was the lowest rate on record since 1876.

The death-rate from other tubercular diseases was 0.03 less than in 1903. It appears higher than in many of the previous years, but the increase is only apparent ; in the reports of the last three years all deaths from meningitis in children under 12 years of age have been classed as tubercular.

Annual death-rates per 1,000 from phthisis pulmonalis and other tubercular diseases in the 28 years 1876—1903.

		Phthisis.	Other Tubercular Diseases.
1876	..	2.06	.. 0.57
1877	..	2.00	.. 0.49
1878	..	2.13	.. 0.63
1879	..	1.92	.. 0.56
1880	..	1.58	.. 0.33
1881	..	1.96	.. 0.26

		Phthisis.		Other Tubercular Diseases
1882	..	1.89	..	0.26
1883	..	1.92	..	0.18
1884	..	1.16	..	0.19
1885	..	1.69	..	0.15
1886	..	1.70	..	0.30
1887	..	1.53	..	0.53
1888	..	1.51	..	0.47
1889	..	1.72	..	0.36
1890	..	1.56	..	0.33
1891	..	1.83	..	0.40
1892	..	1.63	..	0.40
1893	..	1.68	..	0.34
1894	..	1.52	..	0.14
1895	..	1.17	..	0.26
1896	..	1.32	..	0.11
1897	..	1.32	..	0.39
1898	..	1.88	..	0.45
1899	..	1.43	..	0.29
1900	..	1.42	..	0.29
1901	..	1.21	..	0.16
1902	..	1.42	..	0.47
1903	..	1.26	..	0.47
1904	..	1.15	..	0.44

Five-year Averages :—

	Phthisis.	Other Tubercular Diseases.
1876—1880.	1.93	0.51
1881—1885.	1.81	0.20
1886—1890	1.60	0.39
1891—1895	1.56	0.30
1896—1900	1.45	0.30
1901—1904 (four years)	1.26	0.38

The following table shows the death-rates from phthisis in the various Wards :—

St. Michael	1.49
Castle	0.76
St. Crispin	1.61
South	1.33
North	1.14
Kingsthorpe	0.80
St. James	1.23
Far Cotton	0.43
St. Edmund	1.08
<hr/>	
Borough	1.15

These rates for the various wards have been calculated after distributing to their proper wards the cases who died in the General Hospital and the Workhouse.

The following list shows the occupations followed by those who died of phthisis during the year. The number of deaths is too small to draw any conclusions with regard to the danger of particular occupations, as on the whole the greater the mortality the larger the group in which it occurs. As appeared last year, a high mortality proportionately has occurred among finishers.

Occupational Mortality—Phthisis.

Occupation. MALES.	Under 1 Year.	1 to 5.	5 to 15	15 to 25	25 to 65	65 and upwards.	Total all ages.	Total at Census, 1901.
Finishers	4	6	..	10	2786
Lasters	1	9	..	10	2397
Tapper and Laster	1	..	1	?
Tapper	1	..	..	1	1517
Clickers	6	..	6	285
Rivetter	1	..	1	?
Leather Parer	1	..	1	?
Shoe Room Foreman	1	..	1	?
Painter for Factory	1	..	1	?
Blake Sewer	1	..	1	?
Carrier	1	..	..	1	654
Shoe (not specified)	3	..	3	2500 unspecified at Census.
Soldier, late Laster	1	..	..	1	271 soldiers.
" Finisher	1	..	1	86
Hawker, " Soldier	1	..	1	135 (about).
Milk Seller	1	..	1	752
Clerk	1	..	1	?
Hatter	1	..	1	71
Bookbinder	2	..	2	238
Publican	1	..	1	?
Traveller	1	..	1	?
Lamplighter	1	..	1	?
Hairdresser	1	..	1	?
Musician	1	..	1	?
Journeyman Butcher	1	..	1	?
Ironmonger's Assistant	1	..	1	?

PREVENTIVE MEASURES.—Voluntary notification of cases of phthisis came into operation in Northampton on October 1st, 1900.

Last year I expressed regret that the medical practitioners did not avail themselves more of the opportunity afforded to them to help in the war against tuberculosis. The letter I sent to them on August 29th, 1903, had a good effect, and this year I have to record a greater number of cases notified. Unfortunately however, there is again evidence that notifications are likely to fall off, for of the 71 cases notified, 47 were notified in the first six months of the year, and only 24 in the second six months.

The notifications are still very far from covering the existing cases. The following table shows the notifications compared with the deaths :—

	Cases Notified.	Deaths from Phthisis Registered.
1900	52 (3 months)	87 (whole year)
(Borough enlarged Nov. 1900).		
1901	44	104
1902	34	126
1903	55	114
1904	71	104

The proportion of living consumptives in any one year to those who die in the same period is between three and four to one, therefore in the town during the year 1904 there must have been about 360 cases and of these 71 or less than 20% were notified.

The causes of this reluctance to notify cases of phthisis were discussed in last year's report ; it is needless therefore to refer to them further, but I wish to emphasise my opinion that the only remedy is that the notification of phthisis should be made as compulsory as in the case of the chief acute infectious diseases. It is to be hoped that clauses dealing with this will be inserted in the next Local Act.

Throughout the year, Miss Gough has investigated the cases which came to our knowledge, both those notified by practitioners, and those whose deaths have been registered. I am glad to be able to express my gratification at the care which she has expended on these enquiries and at the full reports with which she has furnished me. She states that she has, as a rule, found people ready and willing to give her the required information, and to have disinfection carried out where necessary. In only 4 cases no information was

obtained. In one case the patient's mother objected, two were lodgers and little was known of them, while the fourth was a death where circumstances prevented her visiting at once, and when she paid the usual visit she found that the patient's relatives had removed from the town.

It is part of her duty to keep the living cases under observation by revisiting in some cases every month, in other cases every three months. Her observations have convinced her that the tenants of these houses are doing their best to keep the disease from spreading by cleanliness, fresh air, etc.

The tables which follow are derived from her report, they have been drawn up according to my suggestions.

	Total.	Males.	Females.
Number of cases notified	71	50	21
Number of these which have died	39	22	17
Number of cases previously notified who have died	11	7	4
Number of deaths among cases not previously notified	53	30	23
Number of cases notified by friends or neighbours	6	3	3

This table shows that the tendency is not to notify cases until they are nearing their deaths—an unfortunate fact, as most of the mischief to others is then done.

Duration of illness :—

	Notified cases.	Cases not notified.	Cases reported by neighbours
Under 6 months	21	11	—
Over 6 months and under 1 year	13	11	—
„ 1 year „ „ 2 years	17	11	—
„ 2 „ „ „ 3 „	3	6	
„ 3 „ „ „ 4 „	5	3	6
„ 4 „ „ „ 5 „	4	3	
„ 5 and upwards	7	5	
Not ascertained	1	3	
	71	53	6

No overcrowding was found.

Isolation :—

	Notified cases.	Cases not notified.	Cases re- ported by neighbours.
Number having separate beds	11	10	2
’ ” ” ” and rooms	29	26	3
No isolation	31	17	1

Previous Illnesses :—

	Notified.	Not notified.	Reported.
Influenza	26	13	2
Bronchitis	7	1	..
“ Asthma ” .. .. .	..	1	..
Pleurisy	10	4	..
Pneumonia	1	2	..
“ Inflammation of the lungs ” ..	4	2	..
“ Congestion of the lungs ”	1	..	..
Rheumatic fever	5	3	..
Rheumatism	3	..	..
Anæmia	3	1	..
Measles	6	3	2
Whooping cough	3	1	..
Scarlet fever	4	..	..
Enteric fever	3	..	..
Erysipelas	1	..	..
“ Congestion of bowels ”	1	..	..
Hæmorrhage from lungs	3	1	..
Swollen glands and abscesses	5	3	..
Nervous debility .. .. .	..	1	..
Spinal disease .. .. .	..	1	..
Bad “ colds ” .. .. .	..	..	..
No definite illness	16	16	2

Of these diseases, pleurisy, hæmorrhage from the lungs, spinal disease, and swollen glands and abscesses, are evidences of the existence of tubercular mischief rather than previous illnesses. Among the others it is noteworthy how often influenza appears to be connected in some way with phthisis.

Habits :—

	Notified Cases.	Cases not notified.	Cases re- ported by neighbours.
Total abstainers	18	13	1
Temperate	44	35	5
Probably intemperate	1	..	..
Heavy drinkers	7	2	..
Not ascertained	1	3	..

The above figures depend on the statements of the patients and their relatives and must be taken with a certain amount of reserve as it is difficult to get a patient or his friends to admit that he had been intemperate. On the other hand, as the table includes female as well as male cases, the probability is that the majority of the cases were temperate.

Occupations :—

	Notified Cases.	Cases not notified.	Cases re- ported by neighbours.
Finishers	11	3	..
Lasters	8	5	..
Clickers	3	4	1
Leather parer	1	..	..
Blake sewer	1	..	..
Solutioner	1	..	..
Rivetter	1	..	..
Welt sewer	1	..	..
Tapper .. .. .	..	2	..
Shoe-room foreman .. .. .	..	1	..
Hammerer off	1	1	..
Militiaman, formerly laster	1	1	..
„ „ finisher	1	..	..
Currier	1	..	..
Currier's labourer .. .. .	..	1	..
Travellers	2	1	..
Butcher	1	..	..
Clerks	3	..	..
Hairdresser	1	1	..
Chemists assistant	1	..	..
Compositor	1	..	..
Carman	1	..	..
Billiard marker	1	..	..
Cabdriver	1	..	..

Occupations—(Continued).

					Notified Cases.	Cases not notified.	Cases re- ported by neighbours
Salesman, formerly soldier	..	..			I	..	..
Navvy	..	..			I	..	..
Builder's apprentice	..	..	..	..	I	..	..
Publican, formerly rivetter	..	..	..	..	..	I	..
Bookbinders	..	..	..	..	..	2	..
Lamplighter	..	..	..	..	..	I	..
Milk seller	..	..	..	..	..	I	..
School teacher	..	..	..	..	..	I	..
Brick'ayer	..	..	..	..	..	I	..
Errand boy	..	..	..	..	..	I	..
Fitters	..	..	..	..	3	..	I
Shoe machinists	..	..	..	..	3	..	I
Knot tier	..	..	..	..	..	I	..
Laundress	..	..	..	..	I	..	..
Stationer's folder	..	..	..	..	I	..	..
Domestic servant	..	..	..	..	I	..	..
School	..	..	..	..	3	2	2
Nil	..	..	..	..	3	I	..
Housewives	..	..	..	..	9	8	I
Dressmaker	..	..	..	..	..	I	..
Milliner	..	..	..	..	..	I	..
Draper's assistant	..	..	..	..	..	I	..
Musician	..	..	..	..	..	I	..

Among the housewives the former occupation recorded had been dress-maker 1, fitter 2, finisher 1, shoe machinist 3, laundress 3, tailoress 1, caretaker of club 1.

Physique of family :—

				Notified.		Not notified.
Good	..	..	..	41	..	38
Poor	..	..	..	11	..	2
Fair	..	..	..	19	..	9
Not ascertained	..	..	..	..	..	4

Condition :—

				Notified		Not notified.
Single—Males	..	..	..	26	..	17
Females	..	..	..	12	..	18
Married—Males	..	..	..	24	..	19
Females	..	..	..	9	..	9
Widower	..	..	..	..	..	1

Causes of the disease :—

These are classified into probable, possible, doubtful.

<i>Probable :</i>				<i>Possible :</i>	
Father	..	..	.. 5	Companions in army..	.. 6
Mother	..	..	.. 4	Workplaces, fellows, and	
Brother	..	..	.. 8	companions	.. .. 22
Sister ..	..	..	.. 4	Old focus of disease brought	
Husband	..	..	.. 1	out by illness	.. .. 12
Son	..	..	.. 1	Previous tenants	.. .. 3
Mother-in-law	..	..	.. 2		
Sister-in-law	..	..	.. 1	<i>Doubtful :</i>	
Niece ..	..	..	.. 2	Work and habits	.. .. 8
Brother-in-law	..	..	.. 1		
Uncle ..	..	..	.. 1	No cause assignable	.. .. 42
Workfellows	..	..	.. 3		
Neighbours and Companions			4		

A probable cause for the occurrence of the disease has been found, therefore, in 28.5% of the cases, a possible cause in 33.1%, and a doubtful cause in 6.1%. No cause is assignable in 32.3%.

There is no evidence implicating the milk supply in any case, though the source of this is always recorded.

It is doubtful whether any particular workshop or factory has been instrumental in spreading the disease. Very few of these have more than one case debited against them, and those which have are large places with many departments. The evidence at any rate does not as yet justify any interference.

A number of sanitary defects were found by the Health Visitor when visiting houses in which there was or had been a consumptive, these were reported to the inspectors of the districts concerned, who took measures to secure their removal.

Miss Gough concludes her report by referring to the amount of privation which she has observed; this coincides with my own impressions. She states that one cannot help feeling that in some cases a little help is necessary, *e.g.*, in cases where the father of the family is unable to work owing to this disease. In these cases the mother of the family must go to work and out of her small earnings support the family, pay rent, and strive so far as she

can to give the required nourishment to her consumptive husband. It is true there are means of relieving the poor, but it certainly seems that some special attention should be paid to these cases.

There are several lines along which the attack upon the prevalence of tuberculosis may be made, and by laying too much stress on one or other of these, the maximum amount of good possible has not been attained. It seems desirable at this point to sketch a more or less complete scheme for dealing with cases of pulmonary phthisis. Progress, in my view, should be made along all these lines at once, though I consider the most important of all preventive measures is the home for advanced cases.

1. Compulsory notification of all cases of the disease, as of the acute infectious diseases. This can only be obtained through the medium of a Local Act, such as has been passed for Sheffield. Inquiries to be made and instructions to be given as at present in voluntarily notified cases.

2. A special dispensary for consumptives. The duties of such an institution should include :—

- (a) The examination of patients, and the keeping of records of their illnesses and circumstances ;
- (b) The instruction of the patient, how to treat himself and how to avoid infecting others ;
- (c) The dispensing of the necessary medicines, sputum-bottles, and *food-stuffs* if the circumstances of the patient require these.
- (d) The visitation of patients at their own homes, especially of those confined to bed ; the opportunity should be used to study the surroundings of the patients.
- (e) The selection of cases for hospital treatment, either for sanatoria, or for the institution for advanced cases.

(f) The guidance generally of the patient and his friends in matters relating to consumption.

To this dispensary should be sent all cases applying for relief at other institutions ; by this means a great many more cases would come to the knowledge of the Health Office than under the present system.

The administrative control of such a dispensary should lie with the Medical Officer of Health.

The officers of the dispensary should include :—

- (a) A medical man to examine and treat patients, and to visit those ill in their own homes for this purpose.
- (b) A nurse skilled in the open-air treatment of consumption ; her duties beside nursing should include the recording of facts concerning the patients' surroundings ; she should be qualified also to act as a health visitor if her duties were found to allow of this.
- (c) A dispensary officer and caretaker to act as clerk, dispenser of medicines, and general caretaker of the premises.
- (d) A committee of ladies, to each of whom should be assigned a district in which she should visit at the houses where consumptives are found. I attribute much importance to this as bringing into play voluntary effort, and also bringing special cases of the disease into connection with the various charitable organisations.

Such a dispensary exists in Edinburgh ; it is supported by voluntary contributions.

3. Disinfection of houses in which a consumptive has died, and in some cases, of houses in which a consumptive is living.

4. Bacteriological investigation of the sputum to check the diagnosis of the disease, and also to study the progress of the patient.

5. A sanatorium for selected patients requiring a regime not procurable in their own homes.

6. A home for selected advanced cases to smooth the dying weeks or months, and to prevent them infecting others. It is these cases who really keep the disease going.

7. Tuberculosis colonies in the country, to which should be drafted the cases improved by sanatorium treatment, and also many cases found in an early stage without previous sanatorium treatment,

8. The discovery of cases of consumption among school children by the routine inspection of schools by the medical officer to the Education Committee.

About 5% of the cases are under 14 years of age.

SPECIFIC FEBRILE OR ZYMOTIC DISEASES.—The diseases included in the zymotic death rate are smallpox, measles, scarlet fever, diphtheria, whooping cough, typhoid fever, and diarrhoea.

The number of deaths from these diseases was 139, and the death-rate 1.5 ; a figure which is 0.2 more than that of 1903 (1.3).

The zymotic death-rate in England and Wales in 1904 was " 1.94 per 1,000 living, against 2.05, 1.64, and 1.46 respectively in the three preceding years."

Statistics for the years 1894—1904—Northampton.

	1894.	1895.	1896.	1897.	1898.	1899.	1900.	1901.	1902.	1903.	1904.
Zymotic Death-rate	1.4	1.5	2.7	2.7	2.2	1.5	1.6	1.9	1.5	1.3	1.5
Deaths	84	93	168	164	137	93	98	168	134	120	139

ZYMOTIC DEATHS IN DISTRICTS.

Ward.	Smallpox.	Measles.	Scarlet Fever.	Diarrhoea	Diphtheria.	Whooping Cough.	Typhoid Fever.	Total.	Death rate.
St. Michael	5	19	2	3	..	29	2.06
Castle	6	17	1	..	..	24	2.29
St. Crispin	4	7	1	..	..	12	1.07
South	1	1	4	..	..	..	6	0.80
North	10	11	2	1	..	24	1.70
Kingsthorpe	1	2	2	..	..	5	0.50
St. James ..	1	..	1	12	1	..	..	15	1.85
Far Cotton	5	3	..	..	..	8	1.71
St. Edmund	7	9	..	..	..	16	1.57
BOROUGH ..	1	1	40	84	9	4	..	139	1.54

It is satisfactory to note that the zymotic death-rate in 1904 was 0.3 below the average for the years 1894—1903, and that since 1876 the following years only showed a lower rate 1888, 1892, 1894, 1903, while the following years showed the same rate 1890, 1895, 1899, 1902.

NOTIFICATION OF INFECTIOUS DISEASE.

1904.			Small Pox.	Ty- phoid Fever.	Ery- sipelas.	Puer- peral Fever.	Diph- theria.	Scarlet Fever.	Mem- branous Croup.	Total
To January 2...	...	...	...	...	2	...	1	11	...	14
Week ending " 9...	...	...	...	1	4	...	...	40	1	46
" " 16 ..	...	...	...	...	2	...	2	29	...	33
" " 23 .	...	...	...	1	4	...	...	34	...	39
" " 30...	...	...	...	...	1	...	1	31	...	33
" February 6...	...	...	...	...	1	...	...	29	1	31
" " 13...	...	...	...	...	2	...	1	28	...	31
" " 20...	...	...	...	2	3	...	...	35	...	40
" " 27...	...	...	...	1	1	...	1	38	...	41
" March 5	...	...	...	...	3	...	...	46	...	49
" " 12...	...	...	...	2	5	...	1	43	...	51
" " 19...	...	...	...	1	...	...	...	39	...	40
" " 26...	...	...	...	1	1	...	...	20	...	22
" April 2 .	...	...	...	...	1	...	1	21	...	23
" " 9 ..	...	...	...	...	...	...	1	22	...	23
" " 16 ..	...	...	...	...	...	...	...	23	...	23
" " 23...	...	1	...	...	4	...	1	26	...	32
" " 30...	...	...	...	...	1	...	...	15	...	16
" May 7...	...	...	...	1	1	...	...	29	...	31
" " 14...	...	...	...	...	2	...	...	29	...	31
" " 21...	...	...	...	...	1	...	2	45	...	48
" " 28 ..	...	...	...	...	7	...	...	45	1	53
" June 4...	...	...	...	...	1	...	1	27	...	29
" " 11...	...	...	...	...	1	1	1	23	...	26
" " 18 ..	...	...	...	...	5	...	...	26	...	31
" " 25...	...	...	...	...	...	...	2	29	...	31
" July 2...	...	...	...	...	3	1	...	37	...	41
" " 9...	...	...	...	1	4	...	2	34	...	41
" " 16 ..	...	...	...	...	1	1	...	34	...	36
" " 23...	...	...	...	1	...	1	...	34	...	36
" " 30...	...	...	...	...	2	...	1	46	...	49
" August 6...	...	...	...	...	3	...	2	33	...	38
" " 13...	...	...	...	...	...	...	...	34	...	34
" " 20...	...	...	...	2	1	...	...	47	...	50
" " 27...	...	3	...	...	4	...	2	30	...	39
" September 3...	...	...	...	1	6	...	1	25	...	33
" " 10 ..	...	...	...	1	1	...	3	42	...	47
" " 17...	...	...	...	...	6	...	...	30	...	36
" " 24	...	...	...	4	4	...	...	66	...	74
" October 1	...	...	...	3	1	...	1	41	...	46
" " 8...	...	...	...	...	5	...	...	55	...	60
" " 15...	...	...	...	1	3	...	...	83	...	87
" " 22...	...	...	...	1	6	...	...	112	...	119
" " 29...	...	...	...	...	3	...	...	83	2	88
" November 5...	...	...	...	...	1	...	...	81	...	82
" " 12 ..	...	...	...	...	2	...	...	74	...	76
" " 19...	...	...	...	...	3	...	1	75	...	79
" " 26 ..	...	...	...	...	4	...	...	47	...	51
" December 3...	...	...	...	3	2	...	1	70	1	77
" " 10...	...	...	...	...	4	...	3	65	...	72
" " 17 ..	...	...	...	...	2	...	...	66	1	69
" " 24	...	...	...	...	2	...	...	54	1	57
" " 31 ..	...	...	...	2	3	...	6	43	1	55
...	...	...	4	30	129	4	39	2224	9	2439
1903	...	...	37	25	138	5	27	662	12	906

SMALLPOX.—No case of smallpox was notified during the years 1894—1901 inclusive, though there had been an outbreak in 1893. In the year 1902 two cases were reported. In 1903 an outbreak occurred, the first case being notified on March 20th, the last on May 22nd. The total number of cases notified was 37. The remainder of the year 1903 was free from the disease.

No outbreak of any importance occurred during 1904 ; in all, four cases were reported.

The first was a man aged 42 living in Far Cotton, who worked at the Hunsbury Hill Iron Works. The case came to my notice on April 22nd. On investigation I found that he had first felt ill on April 18th, had left work on the 19th, but had gone back on the 20th. On the 21st he went to the surgery of a medical man who called me in on the following day, as he was in doubt as to the diagnosis. The patient had been vaccinated in infancy, and the rash was of a rather indefinite character, and with an indefinite history. He was isolated at home that night, and I visited again on the 23rd, when the development of the rash left no doubt in my mind that I had to do with a mild attack of smallpox. He was at once removed to the smallpox hospital.

The method of dealing with these cases was fully detailed last year in the special report dealing with the outbreak in 1903, and it is only necessary to say here that every precaution there detailed was fully carried out in this case. The manager at the works was warned and all the 'contacts' were sent home, those in the borough were paid their wages by the Council during the period of forced abstention from work. The result was satisfactory, as no further case occurred.

No cause could be found for the patient's illness, though every enquiry was made, and the only conclusion to which it was possible to come was that he had been in contact for a short time with some tramp in an infectious state who had passed through the town but had not made any stay.

Three cases occurred later in the year in a group at St. James End. The first case—the mother of the family—had been vaccinated in infancy. She felt ill on August 9th, and the rash appeared on August 11th. I did not see it at this time, but it must have been of the mildest variety, as the medical attendant believed that he was dealing with a case of chicken pox, and did not notify the case. A daughter aged 5 fell ill on August 24th, and the rash appeared on August 25th. The husband of the first case fell ill August 24th, and observed a slight rash on August 26th. This third patient was overlooked

by the medical attendant as his attention was not drawn to the spots. On August 27th he called me in, as the rash in the child was taking an unusual course, and he suspected smallpox. There was still some doubt, so the family were isolated at home that night, and visited again the following day. The progress of the disease left now no doubt that the case was one of confluent smallpox. I had enquired the previous day into the history of illness in the family, and learned of the suspicious character of the rashes of the father and mother. It became clear to me that all three were cases of the disease, and all were removed to hospital on August 28th, where I regret to say at a later date the child succumbed.

The conditions were of great importance, as the mother had been so long allowed to go about in an infectious state. Every possible contact, direct and indirect, was hunted up. Additional anxiety was added by the fact that the mother had been in the habit of repairing bags for a firm in town, which were afterwards filled with seeds and distributed about the county. Some of these bags were traced to the depot of the firm and were disinfected, but others could not be traced. The County Medical Officer was informed, and a sharp look out was kept for cases of the disease.

The precautions again proved successful and no further case occurred.

As regards the cause of the disease, some light appeared to be shed on the case by the fact that the family had been for a day trip to Skegness on July 25th. No cases of smallpox were known to have existed there, but cases of the disease were known in Lincolnshire. The chances of infection during the journey must also be considered.

A considerable sum of money was allotted for the smallpox hospital expenses in the estimates, a large part of this remained unspent, and consequently the remainder of the debt on the building was paid off, so that Northampton has now completely paid for a separate smallpox hospital.

VACCINATION.—I have obtained the following figures by the courtesy of Mr. Paget, the County Medical Officer of Health, who has calculated them from the official figures as far as the year 1902, he has supplied me with figures which have enabled me to calculate the percentage for 1903.

The figures apply to the Northampton Union, which contained at the census somewhat over 89,000 people. This Union does not include Far

Cotton with its population of over 4,000, but does include the districts of Great and Little Billing, Weston Favell, Dallington, Duston, Bugbrooke, Harpole, Kislingbury, Nether Heyford, Upper Heyford, and Upton, which contain about 6,500 people. The vast majority of the population belongs to the Borough, and the figures may be accepted as practically correct for the Borough.

Table showing the percentage of children who have not been vaccinated, after deducting the children who died before being vaccinated.

1893—1897	..	..	83.3
1898	..	..	81.4
1899	..	..	73.5
1900	..	..	76.2
1901	..	..	66.6
1902	..	..	58.7
1903	..	..	62.9

The table shows the effect of the outbreaks of smallpox in London and elsewhere during the years 1901—1903, but it is to be feared that the effect is beginning to wear off. In 1903, in spite of the outbreak in Northampton, no less than 1,096 certificates of conscientious objection were granted out of 2,213 children born inside the district of the Union during that year.

In this connection I wish to draw attention to the case of the unfortunate child who died. There were four children in the family, of whom three had been vaccinated. Not one of these three caught the disease, the fourth caught it in the severest confluent form, the father and mother, who had been vaccinated in infancy, and who were therefore only partially protected owing to the great length of time since their vaccination, caught the disease in the mildest possible form. I confess I fail to understand the mental attitude of those who say that successful recent vaccination does not protect against smallpox.

Mention has been made in a previous paragraph of the possibility of a tramp giving rise to the disease. To such an extent has this class been responsible for spreading the disease throughout the country, that a special conference was summoned by the London County Council on November 10th to consider the question. The Chairman of the Sanitary Committee and the Medical Officer of Health attended this conference, and they have already presented a full report on the proceedings. It is only necessary,

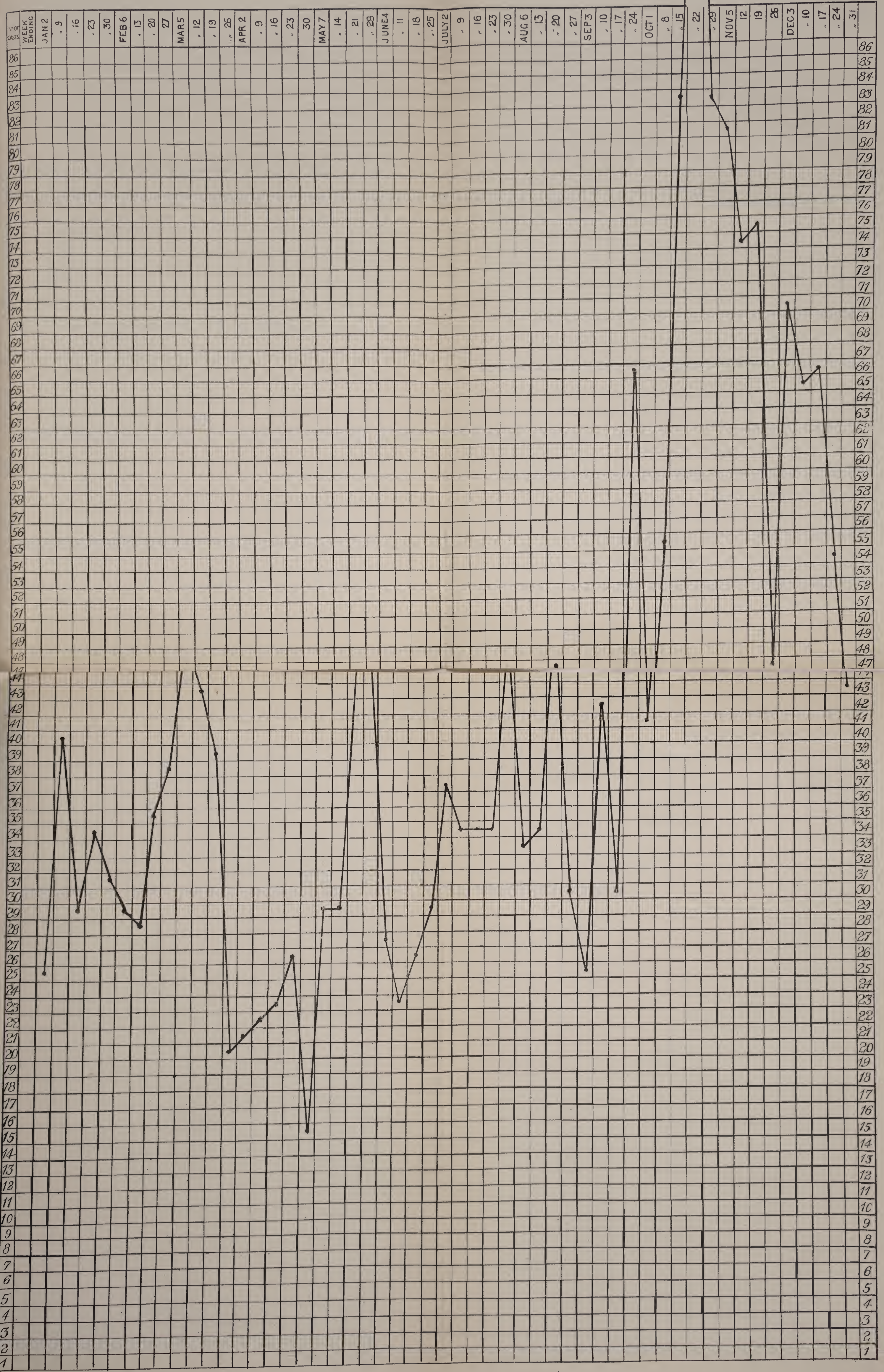
therefore, to briefly refer to the resolutions. These recognised the importance of the question, the necessity of further powers, the importance of vaccination and revaccination, and the necessity for penalties when false information is given. They recommended the establishment of intelligence bureaux. The granting of further powers to Port Sanitary Authorities, of powers for dealing with common lodging houses and the inmates of casual wards. It was also agreed that labour bureaux should be established, and that bona fide working men should be distinguished from tramps and helped to find work. Labour colonies for the compulsory detention of habitual vagrants, and powers in connection with the children of vagrants were also thought desirable aims to work for. It is to be hoped that as regards practical results, the conference will not prove abortive, for the importance of the subject, and the thorough way in which the suggestions dealt with the question, cannot admit of doubt.

SCARLET FEVER.—I have again unfortunately to record the existence and progress of an epidemic during the year. Last year I stated “It should however be noted that 1903 seems to have shown only one half of the epidemic, for a glance at the chart shows that the number of cases notified was rising during the last few months of the year. Probably 1904 therefore will produce a considerably greater number of cases than 1903 has produced.” It is small consolation to think that my prediction has been more than verified. As is shown in the accompanying table, there were 2,224 cases of scarlet fever notified, an enormously higher number than those notified in any year since 1894, far beyond the figures even of the epidemic years 1897 and 1898. It is true that when the increase in the population is considered, the increase is of less magnitude than at first appears, but even then the attack rate 24.62 is much higher than the previously highest recorded in the eleven years, 14.2 in 1897. The chart shows that the epidemic has pursued a very irregular course, and it is impossible to predict its course during 1905, but the fall shown during the last weeks of the year has been continued in 1905, and there is therefore reason to hope that the disease will largely disappear in 1905, though periods of recrudescence are to be anticipated.

Age incidence of Scarlet Fever during 1904.

Under 1 year.	1 to 5.	5 to 15.	15 to 25.	25 to 65.
22	558	1418	181	45

This table shows the same features of that of last year. Scarlet fever is a disease of childhood, adults are generally insusceptible, as are also infants.



SCARLET FEVER TABLE.

Year.	Population.	Notifications	Attack Rate per 1000.	Deaths.	Death-rate per 1000.	Case Mortality per cent.	Zymotic Death-rate per 1000.	General Death-rate per 1000.	Removed to Hospital.	Percentage removed.
1894	61057	429	7.03	7	0.11	1.6	1.4	14.9	200	44.2
1895	61072	269	4.4	9	0.15	3.3	1.5	15.0	139	51.7
1896	61087	384	6.3	11	0.18	2.6	2.7	16.1	264	68.7
1897	61102	866	14.2	41	0.67	4.7	2.7	17.0	432	49.8
1898	61117	731	11.9	15	0.24	2.0	2.2	16.2	317	43.1
1899	61132	338	5.5	11	0.18	3.2	1.5	15.0	232	68.3
1900	61147	93	1.5	3	0.05	3.2	1.6	15.5	67	72.1
1901	87021	171	1.96	3	0.03	1.7	1.9	13.9	108	63.2
1902	88206	161	1.82	3	0.03	1.9	1.5	14.7	118	73.2
1903	89960	662	7.36	24	0.27	3.6	1.3	13.5	398	60.1
1904	90340	2224	24.62	40	0.44	1.8	1.5	13.1	746	33.5

The deaths from this disease during the year numbered 40, the death-rate amounting to 0.44 per 1,000 of the population.

The case mortality, or percentage who died of persons attacked, was 1.8. Considering the enormous number of persons attacked the mortality has been remarkably low. Although the number of cases was more than double those recorded in 1897, the number of deaths was less by one ; while the case mortality was only a little over one third, and indeed is less than that of any year of the eleven except 1894 and 1901. This phenomenal mildness of the epidemic has an important bearing on its spread as it will appear later.

Monthly table.

Month.	Notifica- tions.	Deaths.	Case Mortality per cent.	Removal to Hospital desired.	Removed to Hospital.	Percentage removed of these willing.	Percentage removed of total.
January ..	145	2	1.38	79	56	70.9	38.6
February ..	136	1	0.73	66	50	75.7	35.8
March ..	153	3	1.96	74	56	75.7	36.6
April ..	92	0	..	47	53	112.8	57.6
May ..	162	6	3.70	96	56	58.3	34.6
June ..	117	2	1.71	64	57	89.1	48.7
July ..	159	3	1.88	103	68	66.0	42.8
August ..	158	6	3.79	77	63	81.8	40.5
September ..	188	3	1.59	98	55	56.1	29.3
October ..	353	3	0.85	159	73	45.9	20.7
November ..	307	7	2.28	147	82	55.8	26.7
December ..	254	4	1.58	116	77	66.4	30.3
WHOLE YEAR ..	2224	40	1.80	1126	746	66.2	33.5

The above table shows the progress of the epidemic during each month, its fatality, the numbers willing to go to hospital, the numbers removed, and the percentages. The number of cases removed was over 300 greater than that recorded for any other year of the eleven, but owing to the enormous number of cases the percentage removed of the total cases occurring was smaller than in any year of the group 1894—1903.

In this connection it is important to remember that in only about one half of the cases were the parents or relatives willing that removal should take place. The Inspector, when making his enquiries, always asks whether

removal is desired or not. No efforts were made, save in a few cases, where removal was evidently urgently required, to induce the relatives to permit removal of the case, but on the other hand, no efforts were made to induce the relatives to say that they were unwilling, although even in the willing cases it was often the Inspector's duty to inform the relatives that removal was impossible. Two thirds of those willing to go were removed. In the vast majority of the remainder, and in practically the whole of those unwilling to allow removal, a considerable degree of home isolation was possible. How successful home isolation can be is proved by the fact that in a considerable proportion of the cases, no second case occurred in the house. It is needless to say that in these houses the precautions recommended were adhered to, while in those houses where fresh cases occurred these could mostly be traced to carelessness or unwillingness to carry out the precautions detailed. In some cases where the precautions were carried out, and yet fresh cases occurred, these were probably due to infection received altogether outside the household, or to infection received before the notification of the first case, or from the same source.

In selecting cases for hospital treatment, the principles detailed on page 61 of last year's report were followed. As cases of this kind occurred, they were entered on a list, showing the name of the patient, the address, the age, the date of notification, and the reasons for removal. As vacancies occurred at the hospital, these were filled up from this list, giving preference to the more urgent cases.

The epidemic has been of a very mild type. This is indicated by the exceedingly low case mortality. Of the 746 cases treated in hospital, only 8 died; not one was of the malignant type, though a number of severe cases, owing to extensive implication of the throat, occurred. No better proof could be given of the extreme mildness of many of the cases than the fact that in a number of cases the medical man in attendance doubted the existence of the disease till the occurrence of desquamation put the matter beyond a doubt. In 8 cases the Inspector was informed that the patient was desquamating, and that the case had not been previously notified because the medical attendant did not think that the patient was affected with scarlet fever. One of these cases had had a sore throat for two weeks, receiving frequent medical attention, another had been treated for mumps for ten days, another for quinsy for a month, another for rheumatism for five weeks.

The following cases are interesting :—

Case 40.—The Inspector met the medical attendant at the house ; the latter said that he was not quite sure that the case was one of scarlet fever, but he thought it best to certify, as the patient was engaged in the milk trade ; he added that he would like the Medical Officer of Health to see the case.

Case 102.—The doctor had attended the patient for a fortnight before notification, he then noticed a slight roughness on the skin of the neck and back of ears. He had, however, previously suspected scarlet fever, as he had advised the mother to keep the child upstairs.

Case 908.—This case was not notified till the beginning of July, the rash appeared on June 20th, and on the following day the child was taken to the doctor, but he thought it only had a cold. The patient was kept at home for a week and then attended school on June 27th.

Case 1905.—A child in this house had a rash and sore throat a fortnight previously ; the doctor saw him and said he had scarlet fever, but altered his mind the following day ; later on the child was notified.

On one occasion a woman informed me that a neighbour of hers had a child who was suffering from scarlet fever. This neighbour had told her that she would not call in a doctor as she did not wish her house turned upside down, and herself to be compelled to keep the child upstairs. On visiting I found the child trotting about the house and court, munching a piece of bread, with a fully developed rash on her body, and other symptoms of the disease present in a slight form. The child was apparently not ill to any degree.

PROCEDURE.—The method adopted in dealing with the cases as they occurred is as follows :—

When a notification is received, the address and date of the notification is entered in a register, and the inspector of the district is informed.

The inspector visits the house and obtains information, which he enters on a form which is preserved in the office. This form covers such points as the patient's name, address, and age, the date of onset of illness, the number of persons in the house, their occupations, the character of the house, the day school and Sunday school

attended, the character of the drainage superficially, the milk supply, the name of the owner of the house, whether it is desired that the patient be removed to hospital, etc. He gives instruction on the measures of isolation and disinfection necessary, and he leaves a printed list of instructions, and a statement of the law dealing with infectious diseases.

Two possibilities are now open, either the patient is removed to hospital, in which cases measures of disinfection are immediately undertaken, or the patient is isolated at home. If isolated at home, the most important points on which stress is laid are the necessity of a separate room which has been stripped of its furniture, that a sheet wet with disinfectant should be hung over the door of this room, that only one person should attend the patient, that the attendant should wear a wrapper or overall in the sick room, and that she should wash her hands after doing anything to the case. Visits at intervals are paid to the house by the Inspector or the Health Visitor to see if these precautions are being carried out. When the patient has recovered the relatives are instructed to obtain a certificate to this effect from the medical attendant. On this being handed in to the office, measures for disinfection are undertaken.

Disinfection is carried out by the disinfectors under the supervision of the inspectors in the manner detailed in the account of the smallpox outbreak presented to the Council last year, viz., the room by the spray, washable articles by soaking in Izal, other articles by steam.

Notice is then served on the owner to strip the paper off the walls and to whitewash the ceiling.

In addition to this direct dealing with the cases, action is taken which is based on the information obtained by the Inspector.

The school which the children attend is notified that a case of infectious disease has occurred in the house and the teachers are directed to exclude all the children belonging to this house from the school.

The cases are classified according to the schools attended, and if a school appears to be specially affected, the Medical Officer of Health visits this school to obtain further information or to endeavour to detect an overlooked case.

The places of work are registered, and the cases classified under this heading. Should any workplace appear to have an unusual number of cases

or of relatives of cases among its employés, the employer is put on his guard either by a letter or by a personal visit of the Medical Officer.

The cases are classified similarly under the heads of Sunday schools, streets, and milk supply, and similar action is taken if there appears any abnormal incidence of the disease on a particular school, street, or milk supply.

A valuable aid in the combat with the epidemic is given by the system of notifications to the Medical Officer of suspected infectious disease among school children by the head teachers of the various schools. The great value of this system is that in times of epidemic it brings to the notice of the Health Office mild cases of disease which would otherwise escape attention altogether. When these lists are received the addresses given are compared with the register of infectious diseases, and addresses already known are crossed off, the remainder are visited by the Health Visitor. She first enquires whether there is a doctor in attendance. If there is she pays no further attention to the case, but if not, she sees the children briefly, and if anything in their appearance or the statement of the mother rouses her suspicions, she informs the Medical Officer, who then visits the house.

At the height of the epidemic in October, I suggested the carrying out of a procedure which I had mentioned in last year's report, viz., the boarding out of the unaffected children. I thought it might be possible to find houses where there were no children and few adults in which the occupiers would be willing to receive these children in return for a small weekly sum paid by the Sanitary Authority. The Council agreed to this, and early in November I wrote to each member of the Council and to all the clergymen and ministers of religion in the town, asking them to give me the names and addresses of people who would be willing to receive these children for 5s. per week each. It was stated, that if scarlet fever occurred, the child would be removed either to hospital or back to its home in which the first case had occurred, and that all measures of disinfection would be carried out free of expense. The idea did not commend itself generally, and the response received was so small that it was clear that the few removals which could be made would have no influence on the progress of the epidemic. The measure was therefore dropped.

The most difficult matter during the year was to secure that isolation at home was properly kept up. It is a pleasure to be able to state that in

most cases the measures recommended were practised and adhered to throughout, at least in large degree, but there were many cases where ignorance, stupidity, obstinacy, or overweening self-confidence led relatives into practices which directly contributed to spread the disease.

Case 817.—This child received some flowers over the end garden wall from a child belonging to the adjoining house in the next street. At this house there had been five cases of scarlet fever; the mother had allowed the children while still in an infectious condition to play in the garden.

Case 886.—Another child was put to sleep with this case with the idea that as it had not had fever it could catch it and both could be nursed together.

Case 1296.—Scarlet fever had occurred in this house, one of the elder girls came to the Health Office to enquire whether she would be allowed to go to work. The Medical Officer saw her and found that she was desquamating. Evidently a very mild attack had occurred.

Case 1808.—The inspector was informed that this patient was taken ill about five weeks before and was kept away from school for three weeks, she then returned to school for some days, but fell ill, her mother then for the first time called in a doctor who declared that she was suffering from the after effects of scarlet fever. While enquiring into this case the Inspector saw a boy come into the room, he asked him if he had been unwell of late, his mother said not, but later said that he had been a little unwell about six weeks before. The Inspector looked at his hands, saw that they were peeling, and informed the Medical Officer, who agreed that the boy was desquamating. When first seen he was just going on an errand to purchase some butter and had money in his hand.

It is clear in this case that the children's mother had shown great negligence in not calling in a doctor, for she must have seen that the patient was desquamating, but the case was aggravated by the fact that it was only by repeated visits and warnings that she could be induced to keep up even a semblance of isolation. Repeatedly she allowed the children to come into the living room, and it is even believed that one of the patients was allowed to go out, but sufficient proof could not be obtained of this.

Table showing the number of cases of Scarlet Fever connected with each School during each month of the year, 1904.

	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total.	Approximate No. of Pupils.
Stimpson Avenue	6	7	10	15	9	5	9	11	7	12	14	19	124	1270
Kettering Road	25	4	8	2	8	2	10	2	11	36	35	18	161	1300
St. James'	7	15	21	7	4	10	26	11	14	19	23	17	174	1200
Spring Lane	8	10	15	4	16	10	6	4	15	39	17	18	162	1100
St. Mary's, Mounts	3	2	..	6	3	4	7	1	10	5	4	1	46	{ 730
Clare Street	..	1	1	2	2	1	1	2	4	1	2	..	17	
The British	12	9	14	6	6	9	2	9	14	42	24	20	167	1300
Military Road	13	11	13	6	11	6	11	16	16	20	15	23	161	1080
Kingsthorpe	1	3	1	3	3	9	4	12	3	1	3	5	48	450
Barry Road	2	..	1	2	6	4	10	9	7	9	12	6	68	820
St. Edmund's	9	9	2	2	11	2	8	6	5	9	6	5	74	470
Vernon Terrace	13	20	19	14	8	10	22	11	14	33	15	4	183	980
St. Sepulchre's	6	6	8	3	5	4	3	6	11	11	8	8	79	500
St. Matthew's	1	2	1	..	4	1	4	8	3	6	5	3	38	650
St. Peter's	..	1	..	..	5	1	..	2	10	..	..	1	20	250
St. Andrew's	5	6	8	3	13	5	2	3	2	11	24	21	103	540
Far Cotton	2	1	2	2	4	7	11	9	11	35	43	39	166	970
All Saints'	4	5	1	7	6	8	8	19	12	11	9	5	95	700
St. Paul's	8	11	18	5	22	6	5	4	14	23	17	11	144	750
St. Giles'	2	3	7	2	1	..	2	4	4	3	8	9	45	320
St. Katharine's	3	..	2	..	5	4	5	1	1	11	12	4	48	400
Queen's Park	3	3	..	..	1	..	1	2	1	2	5	3	21	450
Blue Coat School	1	..	1	..	2	..	..	4	1	..	2	3	14	?
St. Luke's	4	5	..	2	2	..	1	1	2	..	2	4	23	130
Other Schools	3	3	3	..	3	3	2	8	1	5	8	8	47	?
TOTALS	141	137	156	93	160	111	160	165	193	344	313	255	2228	

In a number of other cases, defects of various kinds were found in carrying out the requisite precautions. Many of these cases I visited and tried to bring those responsible to a more reasonable frame of mind. The great difficulty was to bring them to see that they had any responsibility for any children but their own, the favourite excuse for their lapses being that the child was now much better, and that they thought that it needed more room to run about.

In times of epidemic schools are often closed, and again and again the question whether this should be done or not suggested itself. Only one department of one school was closed during the year. The reasons for not availing myself to a larger extent of this method I will now discuss.

I give a table showing the monthly incidence of the disease on the various schools. The table, however, requires to be considered with a due regard to the principles on which it has been constructed. It will be observed that the number of cases given are "connected with" the various schools. It is also to be noted that the total number of cases, 2,228, is more by four than the total number of cases which occurred. The table gives the school attended not merely by the patient, but by his brothers and sisters. It therefore follows a single case is often credited to two or more schools in cases where the children, as frequently occurs, did not all attend the same school; besides, where a patient was too old to attend one of these schools, but had brothers or sisters attending school, the school which they attended is credited with the case. To show how this reduces the apparent incidence, I may mention that 226 of the cases were over the age of 15 years, and that 22 were under one year old. As the children do not attend under the age of 3 years and leave at 13 or 14 years of age, it may safely be said that about 400 should be deducted from the total number to allow for this; while to allow for those cases credited to more than one school, 150 to 200 should be deducted. From the figures therefore should be deducted about one-fourth or 25% to get at the actual facts.

It is a serious matter to close a school and so interfere with the education of the children, but as all considerations must give way to the question of health, this would not have deterred me from recommending the closure of a school had I been convinced that this proceeding would have checked the disease.

It will be observed from the table that nearly every school was attacked to some extent, and that while some schools were affected to a greater extent than others, no school stood out prominently from the rest. The schools

mainly affected proportionately to the numbers attending the schools were Kettering Road, St. James', Spring Lane, British, Military Road, St. Edmund's, St. Sepulchre's, St. Andrew's, Far Cotton, All Saints', and St. Paul's. These schools were fairly evenly affected. Each school, however, consists in some cases of three, in other cases of two departments ; it was necessary, therefore, to consider whether the boys', the girls', or the infants' departments were most affected. On studying this point, I found that taking the schools as a whole, the epidemic had affected each department to much the same extent ; it would, therefore, during the greater part of the year have been useless to close one department of the school, the whole school would necessarily have been closed had the aim been to combat the epidemic by this means.

The schools with the largest number of cases during the last quarter of the year when the question became most pressing were Kettering Road, St. James', Spring Lane, British, Military Road, Vernon Terrace, Far Cotton, and St. Paul's. Had the measure of closing the schools been adopted, all these and all their departments would have been closed, with the result that nearly 9,000 children would have been excluded from school at once.

To exhibit the effects of the epidemic on the schools mainly concerned I have prepared the following table, which shows the average percentage attendance at each school for the first seven months of the year, and then for the later months separately.

The lowest figure touched by any school during the first seven months of the year was 83.7, which occurred in July, at St. James' school, and also at St. Andrews. The figures have been obtained from the printed figures kindly furnished to me monthly by the Secretary to the Education Committee.

SCHOOL.	Jan. to July	September.	October.	November.	December.
Kettering Road	89.4	91.6	91.2	82.7	83.4
St. James'	86.4	85.7	86.4	82.2	83.7
Spring Lane	88.9	90	89.6	84	85.4
British	88.9	89.6	88	83	83
Military Road	88.1	86.4	87.7	85.6	85.8
St. Edmund's	87.5	90.2	89.9	85.9	85.5
Vernon Terrace	88.3	89.6	88.6	86	87.7
St. Sepulchre's	87	88.7	87.7	83.1	87.2
St. Andrew's	86.5	92.9	92.2	84.6	83.4
Far Cotton	87.3	85	83.3	77	75.4
All Saints'	89.9	87.9	87.6	87.2	87.9
St. Paul's	86.1	89.9	86.6	79.9	72.4

It will be observed that the percentage attendance did not fall in any school below 80 until the month of November, when Far Cotton school had an average of 77. On examining the figures for the various departments it was found that this diminution was mainly due to a deficiency in the infant department, the figures being, boys' 83.5, girls' 82.5, infants' 65. A visit was paid to the school, and on the further facts then obtained, I decided to recommend the closure of the infants' department, and this was done on December 5th. The other school mainly affected was St. Paul's. Here the infant department fell during November to 73.1, but it appears on reference to the table on a previous page, that this was not to any large extent due to scarlet fever. During the winter months, the figures of infant departments vary largely with the weather, and I therefore did not recommend the closure of this school.

During December a further fall took place, but the near approach of the Christmas holidays, which would mean an automatic closure of the school, prevented me from recommending closure, though but for this I should have done so.

As the Education Committee and the Council are now practically one, it seemed to me that it was due to that Committee that the chairman should be consulted before putting into operation any such drastic measure, as the closure of a number of schools, and I had frequent interviews with Alderman Poulton on the question. At last, at his request, I wrote a letter on October 24th to the Secretary of the Education Committee, setting forth the facts as they were up to that date, and requesting that the question should be considered. I was informed verbally that Mr. Poulton did not think, on the figures submitted, that any large measure of closure was justified. Naturally, the Education Authorities shrank from sending 9,000 children to their homes, and looking back on the course of the epidemic since that date, I cannot but think they were justified in their reluctance. The maximum number of cases notified occurred during the week ending October 22nd, viz. 112, but since that time the numbers have diminished steadily.

Besides considering this question, an attempt was made to deal with the schools directly. The Medical Officer, during October and November, visited several of the schools principally affected in order to detect overlooked cases. Each class-room was entered, and those children were asked

to stand up who had recently suffered from sore throats. Those who stood up were brought out of the class and their tongues examined for characteristic appearances, and their hands to discover traces of desquamation. They were asked also, whether they or others at their homes had lately suffered from a rash. When the information given pointed to the possibility of scarlet fever in the house, their homes were visited. This method entailed a considerable amount of work. At Vernon terrace 49 children were examined, at the British school 68, at Spring Lane 76, and at Kettering Road 98. At Spring Lane, one child was found in the desquamating stage, and another at the British school.

The comparatively small effect of closure of schools in this epidemic is shown by the fact that during August, although the schools were closed, 158 cases were notified, or practically the same number as in July, when the schools were open. Scarlet fever rises to a maximum in autumn, a fact which accounts partly for the great autumnal increase in 1904. Nevertheless, when the disease attacks a particular school specially, a great amount of good is likely to arise from closure, for then it is plain that the increase is due to local conditions and not to entirely extraneous reasons.

The widespread character in the town of the epidemic is shown by the following figures, which give the number of cases occurring in each Ward during the year.

	Cases.	CaseMortality per cent.	Death-rate per 1,000.
St. Michael	272	1.84	0.35
Castle	231	2.60	0.57
St. Crispin	276	1.45	0.36
South	164	0.61	0.13
North	452	2.21	0.71
Kingsthorpe	158	0.63	0.10
St. James	234	0.43	0.12
Far Cotton	183	2.73	1.07
St. Edmund	254	2.76	0.68

As happens in every scarlet fever hospital, a certain number of return cases occurred, *i.e.*, where another case develops in the house or near it after the return of a child from the hospital apparently in perfect health and

free from infection. This occurred in 6.4% of the cases discharged from the Borough Hospital, or, omitting certain cases where the case did not occur in the same house, and there was only a comparatively slight association with the convalescent, 5.9%.

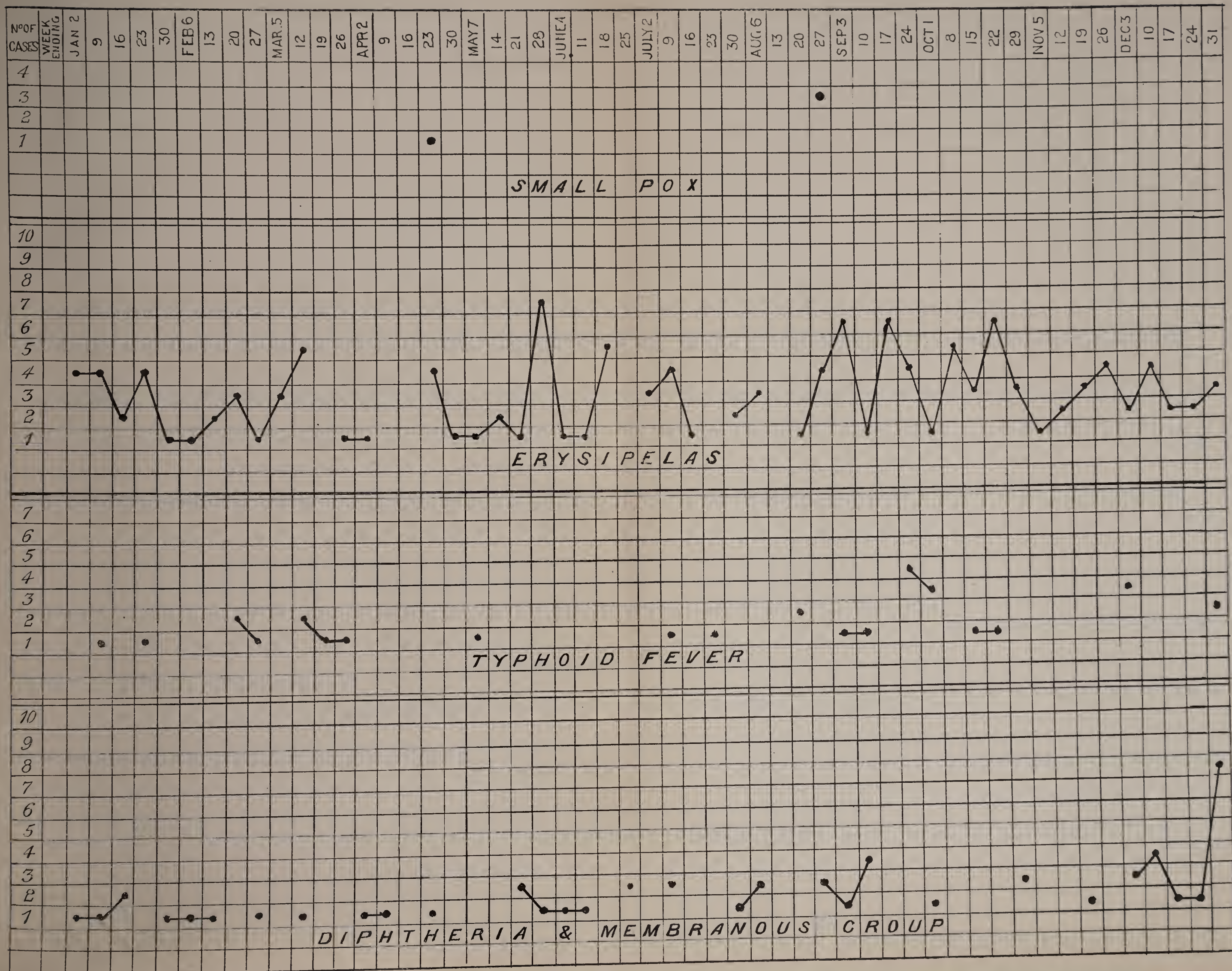
It would be a mistake to consider this purely a hospital phenomenon, for precisely the same thing occurred in 29 cases where the patient was isolated at home, that is to say, a fresh case occurred within a short time of the medical attendant certifying the first case free from infection.

The main cause of the continuance of the epidemic was undoubtedly the occurrence of mild cases of the disease. So mild was it at times that parents have often assured me, even after the medical notification had been received, that the patient had nothing but a slight cold. In addition to these mild cases, numerous instances occurred where other members of the household who had no other sign of the disease suffered from sore throats. There can be little doubt but that, as in cases of diphtheria, where the specific bacterium is known and can be recognised, the germs of scarlet fever can be conveyed by these sore throats, and even be present in the throats of people who are in perfect health, but are, nevertheless, therefore, capable of spreading the disease. Until a definite test has been discovered which shall enable a medical man to say that a person is or is not infectious, there can be little hope in epidemics, where the cases are of a mild type, of getting rid of the disease.

DIPHTHERIA AND MEMBRANOUS CROUP.

Year.	Population.	Notifications	Attack rate per 1000.	Deaths.	Death-rate per 1000.	Case mortality per cent.	Zymotic Death-rate per 1000.	General Death-rate per 1000.	Removed to Hospital.	Percentage removed.
1894	61057	17	0.28	12	0.20	70.6	1.4	14.9	3	17.6
1895	61072	18	0.29	8	0.13	44.4	1.5	15.0	1	5.5
1896	61087	16	0.26	2	0.03	12.5	2.7	16.1	1	6.2
1897	61102	11	0.18	1	0.02	9.1	2.7	17.0	..	0.0
1898	61117	21	0.34	2	0.03	9.5	2.2	16.2	4	19.0
1899	61132	16	0.26	2	0.03	12.5	1.5	15.0	..	0.0
1900	61147	16	0.26	6	0.10	37.5	1.6	15.5	1	6.2
1901	87021	23	0.26	9	0.09	39.1	1.9	13.9	3	13.0
1902	88206	28	0.32	11	0.12	39.3	1.5	14.7	2	7.1
1903	89960	39	0.43	18	0.20	46.1	1.3	13.5	3	7.7
1904	90340	48	0.53	9	0.10	18.7	1.5	13.1	13*	27.1

*Removed to the General Hospital.



DIPHTHERIA AND MEMBRANOUS GROUP.—The table shows that 48 cases were reported during the year, an attack rate of 0.53 per 1,000. The disease shows no tendency to diminish, year by year since 1901 the cases are increasing, though slowly. The cases were pretty evenly scattered through the year, as will be seen by a reference to the table showing the weekly notifications. Only once in December did the disease appear to be tending to an outbreak. The death-rate from the disease was, however, lower than in 1902 and 1903, only reaching 0.10 per 1,000 ; the case mortality, too, has diminished to an equally gratifying extent, and is lower than in any year of the eleven, except the years 1896—1899. Nevertheless, 18.75% is a high mortality for any disease, and indicates how serious and terrible a disease diphtheria is. No doubt mild cases occur, but when a medical attendant is called in, the disease is often in a hopeless condition. The suddenness of the change which may take place in the course of the disease is one of its most appalling features. A child may be well apparently in the forenoon and dead by midnight from suffocation or heart failure. Treatment by antitoxin is the most efficient known method, but the expense of the medication is often a bar to its use ; in certain towns it has been found desirable for the Health Office to furnish it to medical practitioners on request.

The Borough Hospital was unable to admit any cases of diphtheria, and I must therefore express gratitude to the authorities of the General Hospital, for no less than 13 of the cases were removed there, or 27.1% of the total cases. The action of the General Hospital undoubtedly contributed to the fact that the disease remained sporadic and that no serious outbreak occurred.

One outbreak however did occur at Kingsthorpe in December. Four cases had occurred there during the previous months of the year, separated from each other by long intervals, these were evidently sporadic cases, such as occasionally occur in a community of any size. No second case followed any of the four. During December, four cases were notified and one in January, 1905, on the following dates, December 9th, 10th, 15th, 27th, and January 7th. All the cases were traceable ultimately to the Babies' school, High Street, as nearly all the children had attended this school, and, generally speaking, sat in one portion of it. On enquiry, I was informed that a child had been away from school for about three weeks with a bad sore throat, and that others in the school had had slight sore throats. I visited the child mentioned but found him apparently well, a medical man had been in attendance, and him I consulted and pointed out the possibility of

diphtheria, but he was of opinion that the child had not suffered from this disease. Two days after a brother of this child was notified and died the same day, the notification stating membranous croup. I examined the children at the Babies' school and sent home any who appeared to be in a suspicious condition. Disinfectant was used freely in the school, and but for the imminence of the Christmas holidays the school would have been closed. No more cases were notified except one on January 7th. This child caught the disease from her sister who had been notified on December 9th and isolated at home. The necessary precautions had been fairly well carried out, but on one occasion, during her mother's absence, the child disobeyed her mother and entered the sick room.

So ended an outbreak which might have developed into an epidemic. The formidable nature of the disease and the number of fatalities among the cases caused me much anxiety. It is clear that some unrecognised case had been in the school and given rise to the subsequent cases.

Localities in which Diphtheria and Membranous Croup occurred :—

- *Louise Road.
- Gordon Street.
- Oxford Street (2 cases).
- The Avenue, Dallington, St. James'.
- Vernon Street.
- Lower Grafton Street.
- Cranstoun Street.
- *Bearward Street.
- Albion Crescent.
- Bridge Street.
- *Vernon Street.
- *William Street.
- Sunnyside, Kingsthorpe (2 cases).
- Artizan Road (2 cases).
- Cowper Street.
- Gladstone Terrace.
- *Johnson's Buildings.
- *Edith Street.
- *Kingsthorpe Hollow.
- *Abington.
- Swan Street.
- Perry Street.

Milton Street (2 cases).

Well Yard, Kingsthorpe (2 cases).

*Baker Street.

General Hospital.

Mill Road.

Wilby Street.

St. Peter's Gardens.

Stanhope Road.

Woodford Street.

*Sheep Street.

Fetter Street.

*Ashburnham Road.

Kingswell Terrace, Kingsthorpe.

Devonshire Street.

*Salisbury Street.

St. Michael's Road.

Cambridge Street.

*Shakespeare Road.

Allen Road.

Florence Road,

Manor Road, Kingsthorpe.

*Cases of Diphtheria removed to the General Hospital (13 cases).

TYPHOID FEVER.

Year.	Population.	Notifications	Attack rate per 1000.	Deaths.	Death-rate per 1000.	Case mortality per cent.	Zymotic Death-rate per 1000.	General Death-rate per 1000.	Removed to Hospital.	Percentage removed.
1894	61057	40	0.66	6	0.10	15.0	1.4	14.9	5	12.5
1895	61072	41	0.67	7	0.11	17.1	1.5	15.0	11	26.8
1896	61087	17	0.28	3	0.05	17.6	2.7	16.1	5	29.4
1897	61102	28	0.46	7	0.11	25.0	2.7	17.0	1	3.6
1898	61117	36	0.59	4	0.65	11.1	2.2	16.2	16	44.4
1899	61132	46	0.75	11	0.18	23.9	1.5	15.0	22	47.8
1900	61147	69	1.13	17	0.28	24.6	1.6	15.5	44	63.7
1901	87021	70	0.80	13	0.14	18.6	1.9	13.9	40	57.1
1902	88206	63	0.71	17	0.19	26.9	1.5	14.7	33	52.3
1903	89960	25	0.28	6	0.07	24.0	1.3	13.5	7	28.0
1904	90340	30	0.33	Nil.	Nil.	Nil.	1.5	13.1	8*	26.6

*Removed to the General Hospital.

TYPHOID FEVER.—The record for the year is again satisfactory. The total number of cases reported was 30, showing an attack-rate of 0.33 per 1,000. This number is lower than that of any year of the eleven, except the years 1896 and 1903. The most satisfactory feature about the record is that no death whatever took place from this cause. This total absence of mortality from typhoid fever is a record for 25 years, as it has not occurred in any year since 1879.

None of the cases were removed to the Borough Hospital, but eight cases were removed to the General Hospital. As in the case of diphtheria, the willingness shown at the General Hospital to take in occasional cases of typhoid materially relieved our anxiety.

The following cases are of interest :—

Case 16.—The patient ate a number of oysters on December 8th, 1903, which had been brought from Emsworth. At this time an outbreak of typhoid fever had occurred there traced to oyster eating.

Cases 374 and 439.—The only water-supply at the patients' home was a brook at a short distance from the house which ran alongside cultivated allotments. Water was brought to the house in buckets. A proper water-supply has since been introduced.

Case 1021.—The patient was employed at a farm from which typhoid fever spread two years ago. He was in the habit of drinking water from a spring in one of the fields. No case occurred subsequently due to this one.

Case 1295.—Patient fell ill about the end of August. Her brother had been at Bristol on Bank Holiday and brought back some cockles, of which all the family partook. Patient was recovering from confinement at the time.

Localities in which Typhoid infection occurred :—

Derby Road.
 *Collingwood Road.
 St. James' Vicarage.
 General Hospital (2 imported cases).
 St. Leonard's Road.
 Weedon Road (2 cases).
 Brunswick Street.
 Queen's Park Parade.
 *Grafton Street.

Holt's Yard, Cotton End.
 *Artizan Road.
 Cheyne Walk.
 Alcombe Road.
 St. James' Road (3 cases).
 *Fort Street (4 cases).
 *Park Road, St. James'.
 Marefair.
 Stanley Road, St. James.
 Beaconsfield Terrace.
 Arthur Street.
 St. Giles' Street.
 Bridge Street.
 Market Street (imported case).

*Removed to General Hospital (8 cases).

MEASLES.—The total number of cases reported by the head teachers of the various schools amounted in all to the phenominally small number of 22.

Only one death was attributed to this disease, an infant under one year old. The death-rate from measles was only 0.01 per 1,000.

Table showing deaths and death-rates from measles during the last eleven years.

Year.	Number of cases notified from Schools.	Deaths.	Death-rate per 1,000.
1894	..	20	0.32
1895	..	1	0.02
1896	..	114	1.87
1897	..	2	0.03
1898	542	33	0.54
1899	205	1	0.02
1900	637	21	0.34
Borough Enlarged.			
1901	314	5	0.05
1902	1157	43	0.48
1903	482	10	0.11
1904	22	1	0.01

Last year it was stated that the table seemed to show that measles was prevalent every second year. The cases notified from the schools are far from representing accurately the actual number of cases which occur, but relatively to other years a very good estimate can be formed of the prevalence of the disease. The opinion of prevalence every second year was based on the figures given above, especially in the column showing the deaths, but the prediction has not been verified that there would be considerable mortality from measles in 1904. The cause of the change probably is that the year 1902 was a year marked by an exceptionally large epidemic of the disease, and that that epidemic was traceable into the first six months of 1903. A period of markedly diminished prevalence on account of the greatly diminished soil in which the disease could propagate itself, then set in, and this was continued until the last month of 1904, when an increased prevalence began to show itself. The change thus foreshadowed has been more than realised, and 1905 is an epidemic year even should the disease stop short now (March 30th, 1905).

The following table shows the schools affected monthly during the year:—

MONTH.	Spring Lane.	Vernon Terrace.	Kings-thorpe.	St. Pauls.	TOTAL.
January
February
March
April	I	..	..	..	I
May
June
July
August
September
October	I	2	..	3
November	I	I	..	2
December	2	I4	I6
TOTAL	I	2	5	I4	22

During the year the Health Visitor carried out that part of her duties dealing with the distribution of leaflets and the giving of instruction in cases of the minor infectious diseases. I prepared a list of instructions in case of measles, which has been printed by order of the Sanitary Committee, and these have been left at each house where a case has been found to occur. I append a copy of these instructions.

COUNTY BOROUGH OF NORTHAMPTON

MEASLES.

Measles is a very dangerous infectious disease. During the ten years 1894—1903 the total number of deaths from measles alone, in Northampton, was nearly as large as the total number from scarlet fever, diphtheria, and typhoid fever.

Careful nursing of those affected will prevent many deaths.

Attention required by the patient.

In every case seek medical advice.

A patient suffering from measles should, if possible, be placed in a separate room upstairs and kept there until he has quite recovered.

The room window should be kept open at the top to admit fresh air. Pure air is necessary, for the air of a stuffy, badly ventilated room is injurious to the lungs, and it is from infections of the lung that measles patients often die.

To prevent undue exposure of the patient to cold he should be clothed in flannel, and, if possible, there should be a fire in the room.

The bed should be placed in such a position as to be out of the draught between the window and the fire.

During convalescence the child's body should be well rubbed with some substance such as oil or vaseline which will prevent the scattering through the air of any particles of skin which may be shed.

Any discharges from the eyes, ears, or nose should be wiped up with rags, and these rags should be immediately burnt.

Precautions against the spread of Measles.

The disease usually begins with sneezing, coughing, running at the eyes and nose. All colds should therefore be looked upon with suspicion when measles is prevalent. Keep any child so suffering away from the other children for four days, when if the disease is measles, the rash will have appeared.

The child's mother or other person attending to the patient should wear a wrapper while in the sick room.

The other children in the house should not be allowed to associate with the patient for at least three weeks after the appearance of the rash, even though he should appear perfectly well.

The other children also must not be allowed to attend day school, Sunday school, or other place of meeting for at least three weeks after the appearance of the rash in the last case attacked.

No visits should be paid to neighbours' houses, nor should neighbours enter the house where the patient is until the period of three weeks mentioned has passed. It is particularly important to prevent the visits of children.

No milk cans should be taken into the house.

Library books must not be returned to the library from the house, but are to be handed over to the Inspector.

Disinfection.

When the last case has recovered, all articles of clothing worn by the patients, and the bedding and hangings of the sick room should be washed and put out to air for some days. Anything which cannot be washed should be put out to air.

All washable articles of furniture in the sick room should be washed.

The walls of the room, if papered, should be cleaned down with dough, the dough being at once burned. If not papered the walls should be lime-washed. In all cases the ceiling should be lime-washed.

The floor should be thoroughly scrubbed.

The window should be left open for several days, and the window curtains removed so as to admit as much light as possible.

THE PATIENT.—The skin of the child who has been ill should be thoroughly cleansed by several washings with soap and water.

PUBLIC HEALTH OFFICE, 20, GUILDHALL ROAD, NORTHAMPTON.	JAMES BEATTY, M.D., <i>Medical Officer of Health.</i>
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A penalty of £5 is attached to the Exposure of infected persons and things.

**Monthly Table showing various kinds of diseases notified from Schools (not including Measles)
during 1904.**

	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
Scarlet Fever	27	36	16	70	38	101	93	..	222	301	225	101	1230
Chicken pox and Blister pox ..	6	6	1	6	22	33	18	..	2	6	3	4	107
Ringworm	5	5	8	11	15	16	8	..	13	14	6	1	102
Whooping Cough .. .. .	..	..	..	1	1	..	1	..	19	24	14	5	65
Other diseases sent in as the above or as measles, but found on investigation not to be as notified.	2	5	2	8	29	22	14	..	14	55	67	37	255
TOTALS	40	52	27	96	105	172	134	..	270	400	315	148	1759

WHOOPIING COUGH.—This disease was responsible for only 4 deaths, or a mortality rate of 0.04 per 1,000. This is the smallest number of deaths in any one year from this disease since 1879. This is the more satisfactory, as whooping cough is a most dangerous disease. Last year it caused more deaths than any other zymotic disease.

The only method by which the health department gets knowledge of cases is through the schools. In these cases the Health Visitor visits the address given, gives personal instruction on the precautions to be taken, and leaves a printed leaflet on the subject. This leaflet is new and was prepared by the Medical Officer during the year. It is constructed on the same lines as the measles leaflet, and the instructions are in many points identical.

Table of deaths and death-rates from whooping cough during the last eleven years.

Year.		Deaths.		Death-rate per 1,000.
1894	..	31	..	0.51
1895	..	8	..	0.13
1896	..	12	..	0.20
1897	..	63	..	1.03
1898	..	12	..	0.20
1899	..	11	..	0.18
1900	..	18	..	0.29
1901	..	37	..	0.42
1902	..	25	..	0.28
1903	..	32	..	0.36
1904	..	4	..	0.04

DIARRHŒA.—The deaths from this disease numbered 84, the death-rate being 0.93 per 1,000. Owing to the classification adopted by the Local Government Board four years ago, the deaths from enteritis are not included in these numbers. The distinction between the two classes is given on the notes appended to table IV. at the end. Prior to that date the distinction was not observed. Fairly to compare 1904 with the ten previous years, the deaths from diarrhœa and those from enteritis must be added together for each year. This, owing to the classification adopted in earlier years, is not easy, but it has been assumed that diseases of the digestive system in children under five years of age belong to this group. The investigations of the Health Visitor show that the distinction between the two

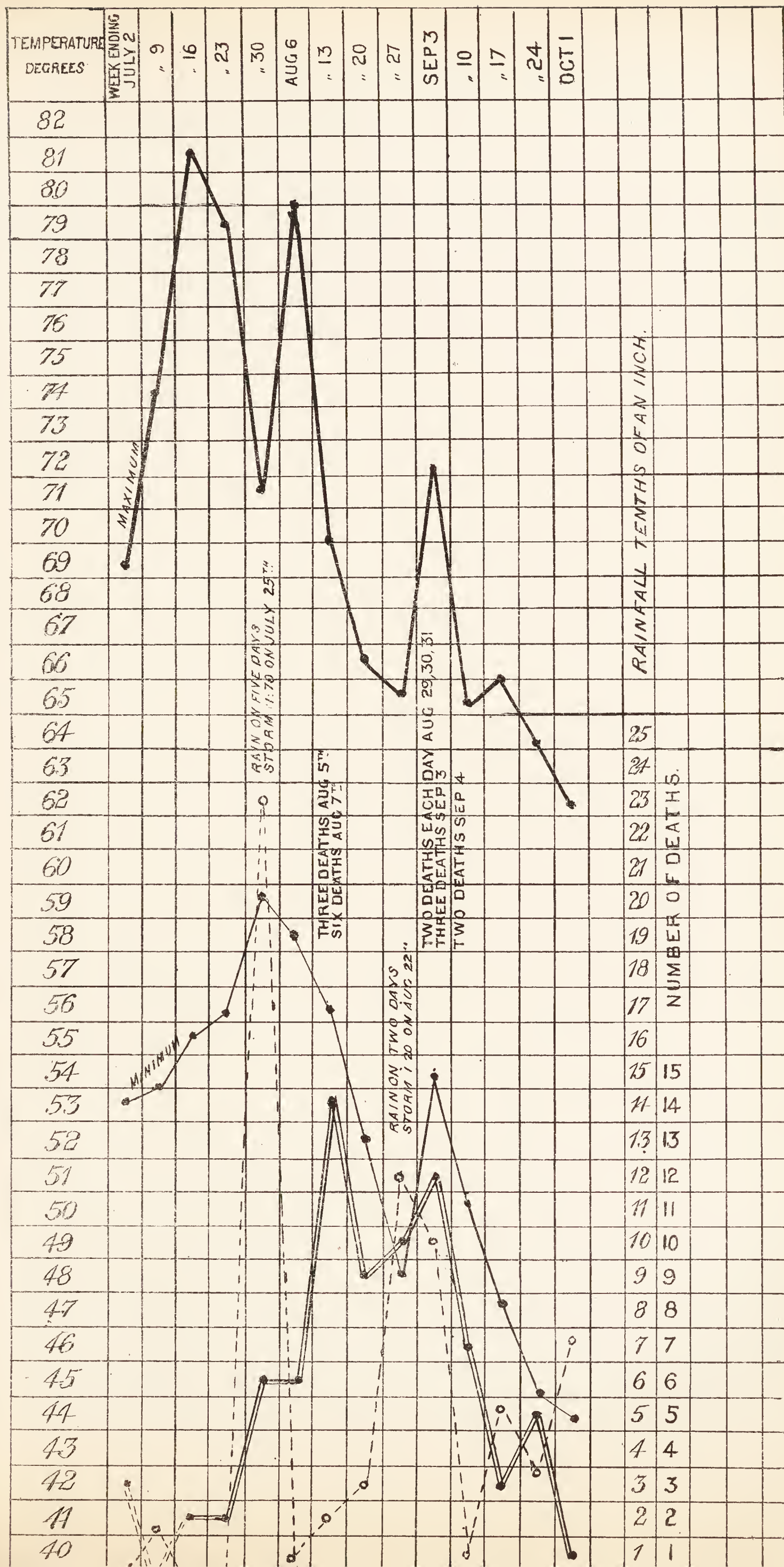
diseases is not a real difference, and that to all intents and purposes diarrhœa and gastro enteritis are one and the same disease.

The following table gives first the deaths and death-rates due to diarrhœa, then the deaths due to enteritis, to both, and finally the rate for both combined. It should be noted that many of the cases classed as diarrhœa in the earlier years would now be classed as enteritis.

YEAR	Deaths from Diarrhœa.	Diarrhœa Death Rate.	Deaths from Enteritis and allied Diseases.	TOTAL.	Diarrhœa and Enteritis Death Rate.
1894	19	0.31	10	29	0.47
1895	67	1.10	7	74	1.21
1896	35	0.57	10	45	0.74
1897	50	0.82	16	66	1.08
1898	71	1.16	5	76	1.24
1899	57	0.93	..	57	0.93
1900	33	0.54	..	33	0.54
1901	79	0.91	26	105	1.21
1902	32	0.36	26	58	0.66
1903	30	0.33	23	53	0.59
1904	84	0.93	13	97	1.03

From this table it appears that 1904 was one of the worse years in this respect. The total death-rate shows that it ranks with the years 1895, 1897, 1898, 1899 and 1901, but the rate was not so great as in any of these years, except 1899. I have no figures showing the character of the weather during these years, but if they were at hand I am sure they would show that these years were marked by the warmth and dryness of their summers, and would therefore be comparable with 1904, when the summer was unusually hot and fine. The low rate for 1903 corresponded with a summer of exactly the opposite character.

In order to study with some degree of exactitude the effect of the weather on this disease I have prepared the following chart, which shows the following points for the months of July, August and September. The previous and later months may be neglected. In the first six months of the year, only 11 deaths were due to diarrhœa and enteritis, and in the last three months only 6. The other name given to this disease, "summer diarrhœa," well indicates its relation to the annual cycle. The points illustrated are first, at the top, the variation of the average weekly maximum temperature during the three months. The average is found by taking the



mean of the maximum temperatures for each day of the week ; second, the average minimum temperatures for the same period ; third, the number of deaths occurring weekly from this disease, stating the dates when the greatest number of deaths occurred ; fourth, the amount of rain in tenths of an inch, stating the dates of rain storms and the amount of rain which fell.

Before studying this chart it should be remembered that, as stated in the section dealing with the infant mortality rate, the Health Visitor found that a number of deaths, probably really due to diarrhoea, were attributed to other vaguer causes.

The total figures obtained by the corrections so made are given on a later page ; the chart refers only to registered causes of death. No change, however, would have been produced in the character of the chart had these been included, except that the curve of diarrhoea deaths would have been greatly heightened.

A study of the chart shows that the curves of maximum and minimum temperatures do not exactly correspond, for while three maxima are represented in the maximum curve, only two are represented in the minimum curve. It shows also that in this respect the death curve corresponds better with the minimum curve than with the maximum curve. The minimum curve is necessarily a better guide to the average condition of the atmosphere as it represents the point below which the temperature did not fall. But while the death curve approximates to the minimum curve it does not exactly coincide, for while the maximum point of the minimum curve was reached in the week ending July 30th, the maximum of the death curve was not reached till the week ending August 6th. The second maxima of the two curves was reached, however, in the same week, that ending September 3rd. There must therefore be another factor. This factor seems supplied by the rainfall. The greater part of July was marked by brilliant weather, scarcely any rain falling, but there was a rain storm on July 25th, when 1.70 inches of rain fell. Eleven days after this, three deaths occurred on one day, and thirteen days after the rain storm, six deaths. On August 22nd another storm occurred, when 1.20 inches of rain fell. Seven days after this, on the 8th, 9th and 10th days taken together, six deaths occurred, and on the 13th and 14th days, five deaths. This second rain storm was also preceded by a period of dry weather. A theory has been propounded to account for facts similar to this. A knowledge of this theory I owe to

Dr. Niven, Medical Officer of Health of Manchester. The theory assumes, of which there can be little doubt, that the disease is microbial, that while a spell of drought is inimical to the usual soil bacteria, the bacteria of summer diarrhœa survive, and when the surface of the ground is well wet by a rain storm they have the field to themselves ; if then another period of hot weather sets in, or the temperature remains high, they flourish exceedingly and cause the disease. There is a certain incubation period for the disease, and also a certain invasion period before it can kill, hence the occurrence of the maximum number of deaths is not synchronous with the storm, but follows it within a fortnight. Whatever be the truth as regards the theory the chart is to a singular extent in its favour.

So far information has been obtained solely from the death returns, but a fruitful source of information has been opened to me through the direct investigations of the Health Visitor. Of the 97 deaths which have occurred from diarrhœa and enteritis no less than 60 were of children under one year of age. It is her duty to enquire into all deaths of children under this age, except where the age or the cause of death shows that little or nothing would be learnt by enquiry. As mentioned on a previous page, she made enquiries into the deaths of 143 children. On classifying results it became apparent that diarrhœa was apparently responsible for more deaths than the registered causes of death showed. In no less than 75 cases was the death apparently due to this disease, or more than 50% of the investigated cases succumbed to this plague. Enquiries were made along the lines mentioned in the section on the infant mortality rate, and the results have been classified in the same way. To make clear that the disease is a summer and early autumn disease, the facts have been given separately for the months of July, August and September, while the first six months of the year are classed together as are also the last three.

Before studying the table I may say the facts are given completely only on the subject of feeding, under which head the whole 75 are classed. In the other cases there is a deficiency in the information obtained at certain points, while at the other points the negative cases are not given. The figures, however, approximate so closely to the number 75 when the subdivisions are added together that the inferences which will be drawn are not invalidated,

**TABLE OF CIRCUMSTANCES OF INFANTS WHO DIED FROM
DIARRHŒA AND ENTERITIS.**

			Jan. to June.	July.	Aug.	Sept.	Oct. to Dec.	Total.
Feeding.	{	Breast	4	..	4	1	1	10
		Breast, later bottle	6	3	16	10	3	38
		Bottle	3	4	15	5	..	27
			} 65					
TOTAL			13	7	35	16	4	75
Bottle used.	{	Long-tube	5	6	25	12	3	51
		Boat	3	1	5	2	..	11
Milk boiled ..			9	5	23	13	3	53
Physique.	{	Good	7	4	14	13	3	41
		Fair	1	..	4	..	1	6
		Poor or puny ..	5	3	13	2	..	23
House.	{	Clean	12	6	28	16	4	66
		Dirty	1	1	4	1	..	6
		Comfortable ..	7	1	18	14	3	43
		Poor	5	6	14	3	1	29
Weakness of mother ..			3	..	5	1	..	9
Stable, slaughter-house, or cowshed near ..			1	..	8	..	1	10
Flies numerous .. ..			..	6	18	10	2	36

There is another much more important proviso. Really to be certain of the various influences it would be necessary to study the circumstances of all children under one year of age during the year, otherwise it is not easy to say whether an apparent factor is a real one or is only apparent because the class to which it belongs is a large one. For example, I have no statistics to show how many children under one year of age are breast fed and how many bottle fed.

In a table on an earlier page the ages of the children at death are given. From that table it appears that nearly all the children died at less than nine months of age. As weaning should in general not be carried out until the end of this period, it may be assumed that those who were breast-fed and later bottle-fed were given bottle feeding at too early a period.

The following inferences appear to follow from the table if the provisos mentioned above are made, and also caution be observed in accepting the inferences as not more than provisional, for the number of cases observed is not great :—

- 1.—Diarrhœa, while mainly a disease of summer and early autumn, occurs sporadically at other seasons of the year.
2. Breast-fed children are much less likely to succumb to it than those who are bottle-fed.
3. The type of bottle is of importance, but it is probable that the main point is perfect cleanliness for there can be little doubt that the “long-tube” bottle is much more common than the boat shaped, probably commoner than the proportion shown, 51 to 11. The boat-shaped bottle indeed does not emerge well from this table.
4. The boiling of milk is a well understood precaution ; this was carried out in no less than 53 of the 65 cases where cow’s milk was used.
5. The physique of a child is not a matter of great importance in connection with this disease, it attacks those of good physique very frequently, and those of puny physique, though probably succumbing to a larger extent proportionately, are not unduly attacked by this disease in comparison with other diseases.
6. Filthy conditions inside the house have little influence. This is a most surprising and unexpected result, but is all the more noteworthy.

7. Poverty has some influence, but the disease is found also freely in the homes of well-to-do artisans.
8. The weakness of the mother has little or no influence. The child has, as a rule, grown out of a hereditary debility by the time it is attacked.
9. Stables have some influence in causing the disease. Nearly all of the ten cases mentioned were stables.
10. Flies have an important bearing on the matter. Their contamination of food is well known and there can be little doubt that many obscure cases of disease are traceable to them. But while this is so, it is important to note that they apparently influenced only half the cases. Flies, therefore, are a subsidiary cause, they are not the main cause.
11. There is plainly some factor at work besides those mentioned. The investigations so far carried out appear to be pointing in the direction of infection, but further light is needed to confirm the conclusion to which they lead with all its far-reaching consequences.

Bad fruit is often given as a cause of summer diarrhœa, but the importance of investigating the disease in these infants is emphasised by the fact that this cause is eliminated. Fruit is not often given, to any extent at any rate, to children so young. Indeed there is only one case recorded in which fruit seems to have had anything to do with the matter. In that case a child of five months was given some strawberries a day or two before the diarrhœa set in.

It is impossible to lay too much stress on the fact that more than 50% of the investigated deaths were due to diarrhœa. Even taking the whole infantile mortality 279, more than one-fourth of this was due to diarrhœa. More significant to note also is the fact that these deaths were nearly all among children who had passed the dangers of earliest infancy, and for whom, therefore, it was just to expect a steady, healthy, and continuous growth. The appalling amount of the infantile mortality, even where it is lowest, gives pause to sanitarians, it is the blot upon our systems, but at the same time it is the direction where the largest amount of good may be done, where the largest number of lives may be saved.

The above figures and facts, to my mind, undoubtedly prove that the attack upon King Death should first be made upon his Diarrhœa stronghold.

*The subjoined table gives the number of Deaths in each year from the Seven
the 25 years 1880 to 1904, and the Annual Average*

	1880	1881	1882	1883	1884	1885	1886	1887	1888	1889	1890
Smallpox .. ..	..	..	4	..	..	..	..	..	..	..	..
Measles	5	111	23	11	3	72	31	35	4	57	11
Scarlet Fever	3	36	11	23	11	6	24	38	22	15	4
Diphtheria or Mem- branous Croup ..	1	3	1	2	9	3	5	2	2	1	..
Whooping Cough ..	33	32	23	43	9	49	27	34	8	43	17
Fever	4	12	6	4	12	4	3	7	7	4	1
Diarrhoea	147	24	24	33	133	31	55	62	32	55	61
Deaths from the seven Zymotic Diseases }	193	218	92	116	177	165	145	178	75	175	94
Total deaths for each year	1011	1115	962	927	999	1064	996	1025	963	1062	1080
Death-rate from the seven Zymotic Diseases per 1,000 }	3.8	4.2	1.74	2.15	3.2	2.9	2.5	3.1	1.2	2.9	1.5
General Death-rate ..	20.0	21.4	18.2	17.2	18.2	19.1	17.6	17.8	16.5	17.9	17.9

*Principal Zymotic Diseases, and the Death-rates, both Zymotic and General for
for the decennial period 1895 to 1904.*

Borough extended.

1891	1892	1893	1894	1895	1896	1897	1898	1899	1900	1901	1902	1903	1904	Average for 10 years 1895-1904.
..	..	..	..	..	..	..	..	..	..	..	..	..	1	0.1
35	14	52	20	1	114	2	33	1	21	5	43	10	1	23.1
1	2	3	5	4	4	41	15	11	3	3	2	24	40	14.7
4	2	5	3	6	2	1	2	2	6	9	11	18	9	6.6
25	14	28	31	8	12	63	12	11	18	37	25	32	4	22.2
5	5	5	6	7	1	7	4	11	17	13	17	6	..	8.3
36	21	62	19	67	35	50	71	57	33	79	36	30	84	54.2
106	58	155	84	93	168	164	137	93	98	146	134	120	139	129.2
1133	962	1070	908	913	979	1042	995	921	951	1216	1294	1219	1185	1071.5
1.7	0.9	2.5	1.4	1.5	2.7	2.7	2.2	1.5	1.6	1.9	1.5	1.3	1.5	1.84
18.5	15.7	17.5	14.8	14.9	16.0	17.0	16.2	15.0	15.5	13.9	14.6	13.5	13.1	14.97

NOTIFICATIONS OF DISEASE BY THE MEDICAL OFFICER OF HEALTH.—During the year, 1,721 notices of the existence of infectious disease in the homes of children attending school were sent to the school managers, the object being to prevent children carrying infection from their homes to the schools by their exclusion from the school.

Similar information was sent to the public library, the total number of notices sent amounting to 2,200.

The following table contains the report of the Registrar-General on the zymotic death-rate in England and Wales, etc., with similar information added as regards Northampton for the purpose of comparison.

Annual Death-rates from certain Epidemic Diseases during the year 1904.

	Zymotic Death Rate.	Small- pox.	Measles.	Scarlet Fever.	Diph- theria.	Whoop- ing Cough.	Fever (Typhoid chiefly).	Diarr- hoea.
England and Wales ..	1.94	0.01	0.36	0.11	0.17	0.34	0.09	0.86
76 Great Towns ..	2.49	0.01	0.47	0.12	0.19	0.40	0.10	1.20
142 Smaller Towns ..	2.02	0.03	0.36	0.13	0.16	0.35	0.10	0.89
England and Wales, less the 218 Towns ..	1.28	0.01	0.23	0.09	0.14	0.27	0.08	0.46
Northampton ..	1.54	0.01	0.01	0.44	0.10	0.04	Nil.	0.93

REPORT OF THE COMMITTEE ON PHYSICAL DETERIORATION.

I desire to direct attention to this remarkable report, as the recommendations it has made show the directions in which progress should be directed to improve the public health. It may be looked upon as a forecast of future legislation. No less than fifty-three distinct recommendations are made; these cover such an immense amount of ground that it is to be feared that this generation will not see them all realised.

It is satisfactory to observe that the Committee state that "the impressions gathered from the great majority of the witnesses examined do not support the belief that there is any general progressive physical deterioration." A great amount of evidence was nevertheless produced to show

that certain sections of the population do show signs of physical deterioration in a marked degree, and our efforts should therefore be directed to bringing the low standard of these classes to or above the present general level.

The fifty-three recommendations cover the following points :—

An anthropometric survey of the population, a register of sickness as well as of deaths, the constitution of an advisory council to deal with all public health matters, the necessity of dealing drastically with overcrowding, the desirability of establishing labour colonies and public nurseries, the necessity of building houses properly and providing open spaces, greater energy in preventing smoke pollution of the air, a register of the owners of houses, all Medical Officers of Health of areas above a certain population to give their whole time to their duties and to have security of tenure, County Councils to be empowered to act in default of district sanitary authorities, all County Councils to appoint Medical Officers of Health, local authorities to report to County Councils on sanitary matters, the law as to insanitary and overcrowded house property to be enforced, factories and their employees to be under medical inspection, enquiry to be made into the causes of over fatigue, medical examination of those employed in coal mines, supervision of workshops to be strengthened, training of teachers on the physical evils caused by drinking, in rural districts the advantages of rural life to be dwelt on, the dearth of cottages in rural districts to be remedied, the teaching of cookery in schools and at mothers' meetings, every dwelling to contain a grate suitable for cooking, a standard of purity to be fixed for all food and drinks, the questions of infant mortality and its connection with the employment of women to be enquired into, still-births to be registered, medical certificates of the cause of death to be required in all cases and to be regarded as confidential, employment of women in factories after childbirth to be surrounded with stricter limitations, provident societies and maternity funds to be encouraged, control of the milk supply to be enforced everywhere, the systematic instruction in continuation classes of girls on the principles of infant feeding, and the distribution of leaflets on the subject, milk depots to be formed in every town obtaining their supply direct from the farms, an investigation to be made into the questions of the sterilisation and refrigeration of milk, enforcement of the provisions of the Midwives Act, 1902, the formation of voluntary health societies, reformation of the elementary schools in Ireland, school attendance in rural districts not to be compulsory till the age of six and to be discouraged under five, methodical physical training of school children and the organisation of their games,

instruction of the elder girls in schools in cookery, hygiene, and domestic economy, partial exemption from school for a child under fourteen on condition of continuing to attend school up to a later age for instruction on special subjects, special schools for retarded children, special magistrates for juvenile cases, the medical inspection of school children, the feeding of underfed elementary school children, physical exercise for growing girls, crèches to be established where necessary, open spaces with shelters fitted with gymnastic apparatus to be provided by local authorities, clubs and cadet corps to be encouraged, physical exercise for growing boys, organisation of existing institutions for the welfare of lads and girls, juvenile smoking to be prohibited, enquiry to be made into the influence of syphilis, enquiry into lunacy in Ireland, special attention to be paid to the care of teeth, eyes, and ears of children, the value of enquiries into vagrancy and defective children.

The ground covered is enormous, but a consideration of it all will show that for the greater part there is no necessity to wait for legislation, progress can be made at once.

At this point I would like to emphasise how much may be done by private, apart from municipal or state effort. The public health is not the care alone of the municipality or the state, private individuals who have the time at their disposal can and ought to make the advancement of the health of the community one of their duties. An enormous amount of good could be done by someone who is not an official, and who is not looking for a seat on the Council, and who could therefore not be accused of having an axe to grind. Such men exist in other towns, *e.g.*, Mr. Rowntree in York. Why should there not be such men in Northampton?

THE MEDICAL INSPECTION OF SCHOOL CHILDREN.—This question ought to be taken up in Northampton. There will soon be few large towns in the country where the education authority has not appointed a medical officer.

The Committee above-mentioned say :—

“ The Committee are emphatic in recommending that a systematised medical inspection of children at school should be imposed as a public duty on every school authority. With the assistance of teachers properly trained in the various branches of hygiene, the system could be so far based on their observations and records that no large and expensive medical staff would be necessary.”

The Royal Commission on Physical Training (Scotland) say :—

There is “ a very serious defect in our school organisation to which we desire to call special attention. This consists in the absence of any general or adequate system of medical inspection. Such a system is urgently demanded.”

THE REFUSE DESTRUCTOR.—This has been taken over by the Sanitary Authority since last year's report was written. Numerous complaints were at first received of the dust produced, and occasionally of foul odours apparently due to insufficiently oxidised gases in the smoke. The destructor appears to be working much more satisfactorily at present.

I have received the following interesting information from the Borough Surveyor :—

“ The whole of the refuse of the town, with the exception of the Kingsthorpe district, is burned at the destructor. The refuse of the Kingsthorpe district is tipped on some irregular ground on the Harborough Road.

The destructor is capable of dealing with 80 tons of refuse per day of 24 hours. The average daily consumption is about 50 tons.

The whole of the steam raised is utilised at the Tramway Power Station, and is the means of reducing the coal bill considerably. The estimated value for the year of the steam is £500.”

MIDWIVES ACT, 1902.—By this Act the Council becomes the supervising authority over the midwives practising in its area. The provisions of the Act allowed for the constitution of a central Midwives Board, which could issue regulations dealing with midwives. By this Board all midwives are registered, either on the ground of having been in practice as midwives, or on passing recognised tests. No midwife can be registered on the ground of practice only after March 31st, 1905. After this date no unregistered person can call herself a midwife, and after the same date in 1910 no unregistered person will be allowed to practise midwifery. The midwife is registered by the Central Board but is supervised by the Council of the District who have power to suspend a registered midwife from practice and must report to the Central Midwives Board, the cause of their action. To secure that all midwives in Northampton should be cognisant of the existence of the Act, I communicated with all the medical men in town asking them to furnish

me with the names of midwives known to them. By this means I obtained about 60 names. To each of the persons named was sent a letter enclosing a resumé of the provisions of the Act, and requesting any who wished to be registered to communicate with me. Very few replied. A second letter was then sent emphasising the point that practice alone constituted a sufficient reason for registration. In all, I got about 26 replies requesting to be informed how to register. To these I replied, sending a book of forms, marking those forms which were to be filled up and to whom they were to be sent, stating the necessary fees, etc. Up to the present I am not aware that more than ten have registered, though on the issue of the Roll by the Central Board it may appear that more have registered. The necessary supervision over these registered midwives will be troublesome, and difficult questions may be expected to arise. Fortunately puerperal fever is rare in Northampton, judging by the notifications received.

WARDS.—In the following summary I have treated each Ward as a separate town. The tables given in last year's report on pages 86—89 are however not repeated, as they are included in the returns required by the Local Government Board in the Appendix. This year, by the courtesy of the Secretary to the Education Committee, I have succeeded in ascertaining the number of births in each Ward. The total number 2,111 differs slightly from the number 2,102 given in the earlier pages of the Report, as that number was obtained in a different way. The number 2,102 indicates the number of births registered during the year, while the number 2111 indicates the number of births which actually occurred. The cause of the discrepancy is that a period of six weeks is allowed after the birth of a child during any part of which its birth can be registered, consequently the total actual births cannot be ascertained till six weeks after the conclusion of the year. The number registered in the year necessarily includes a number of births which took place towards the end of the previous year, and does not include a number of the births which took place towards the end of the year under consideration.

I have endeavoured to eliminate the effect of the presence of Institutions for treating the sick in the various districts, by obtaining the home addresses of those who died in the General Hospital and Workhouse. This has enabled me to distribute to the various Wards most of the deaths in these Institutions, but in some cases this could not be done either because no home address was known, or because of the long stay of a case, especially in the Workhouse ; the Ward—St. Michael's—in which the Workhouse is situated was necessarily debited with the death.

	St. Michael.	Castle.	St. Crispin.	South.	North.	Kings-thorpe.	St. James	Far Cotton.	St. Edmund.	Borough.
Population, Mid. 1904	14052	10454	11184	7517	14077	10051	8110	4678	10217	90340
Inhabited houses (1901)	2750	2179	2182	1618	2733	1886	1482	908	1864	17602
Deaths 1904	182	165	156	107	195	104	100	63	113	1185
Zymotic deaths (from the seven principal epidemic diseases)	29	24	12	6	24	5	15	8	16	139
Cases of scarlet fever notified	272	231	276	164	452	158	234	183	254	2224
Deaths from scarlet fever	5	6	4	1	10	1	1	5	7	40
Births	283	252	246	147	371	263	207	140	202	2111
Deaths of infants (under 1 year)	36	49	24	15	61	29	29	16	20	279
Deaths from phthisis	21	8	18	10	16	8	10	2	11	104
Deaths from other tubercular diseases	6	3	5	7	9	2	..	4	4	40
Total deaths from tubercular diseases	27	11	23	17	25	10	10	6	15	144
Deaths from diarrhoea and enteritis	20	18	10	6	14	3	13	4	9	97
No of inhabitants per house (1901)	4.99	5.13	5.11	4.87	5.04	4.76	4.80	4.50	4.88	4.94
Death-rate	12.95	15.78	13.95	14.23	13.85	11.01	12.33	13.47	11.06	13.12
Zymotic death-rate	2.06	2.29	1.07	0.80	1.70	0.50	1.85	1.71	1.57	1.54
Attack rate of scarlet fever per 1,000	19.36	22.10	24.68	21.82	32.11	15.72	28.85	39.12	24.86	24.62
Case mortality of scarlet fever per cent.	1.84	2.60	1.45	0.61	2.21	0.63	0.43	2.73	2.76	1.80
Birth-rate	20.14	24.11	22.00	19.56	26.35	26.17	25.52	29.93	19.77	23.37
Infant mortality rate per 1,000 births	127.2	194.4	97.6	102.0	164.4	110.3	140.1	114.3	99.0	132.2
Phthisis death-rate	1.49	0.76	1.61	1.33	1.14	0.80	1.23	0.43	1.08	1.15
Total tubercular disease death-rate	1.92	1.05	2.06	2.26	1.78	0.99	1.23	1.28	1.47	1.59
Diarrhoea and enteritis death-rate	1.42	1.72	0.89	0.80	0.99	0.30	1.60	0.85	0.88	1.07

Before drawing any inferences from the foregoing table the following caution must be given. The numbers dealt with are comparatively small and extend over one year only. No secure inference can be drawn as to the comparative healthiness or unhealthiness of a Ward until the figures are available for a number of years. Unfortunately, too, the figures showing rates are not comparable with those given at page 96 of last year's Report, as further consideration has convinced me that the populations there given for the Wards were calculated on erroneous principles. It will be necessary to recalculate the rates on corrected populations before the rates are comparable.

The following statements apply to the year 1904 only :—

St. Michael Ward is one of the two most populous Wards in the town, the North Ward alone having a slightly larger population. Its death-rate was at about the average. On the other hand, its zymotic death-rate was high, being the second highest on the list. Scarlet fever attacked it freely no doubt, but to a less extent than most of the other districts. The case mortality of the attacks was about the average. The birth-rate was low, being the second lowest. Its infant mortality rate was about the average, but phthisis and total tubercular diseases were decidedly above the average, while the diarrhoea and enteritis death-rate was high.

Castle Ward has much the same population as Kingsthorpe and St. Edmunds. Its death-rate was the highest, but was not greatly above the average. The zymotic death-rate reached its highest point in this Ward. The case mortality for scarlet fever was high, but the attack rate from scarlet fever was about the average. The birth-rate was about the average, but the infant mortality rate was enormous, much higher than in any other Ward. The diarrhoea and enteritis death-rate also reached its highest point here, but on the other hand, it is remarkable to note that the phthisis death-rate was low and that the total death-rate from tubercular diseases was also very low.

St. Crispin Ward had a low zymotic death-rate, the highest phthisis death-rate, but the lowest infant mortality rate, its diarrhoea and enteritis rate was low.

South Ward had a very low zymotic death-rate and a very low case mortality rate for scarlet fever, its birth-rate was the lowest, and its total tubercular rate was the highest, the diarrhoea rate was low.

North Ward is the Ward with the largest population. This Ward produced one-fifth of all the cases of scarlet fever, its attack rate being very high, and the case mortality was also above the average. The birth-rate was above the average. The infant mortality rate was next highest to the Castle Ward but at a long interval.

Kingsthorpe had the lowest death-rate, the lowest zymotic death-rate, the lowest attack rate from scarlet fever, and the lowest total tubercular death-rate. The case mortality from scarlet fever and the phthisis death-rates were also low, and the diarrhoea rate was the lowest. Its birth-rate was decidedly above the average, and its infant mortality rate below the average.

St. James' Ward had a high attack rate from scarlet fever but the lowest case mortality, its diarrhoea rate was the second highest. In other respects it was about average.

Far Cotton, the Ward with the smallest population, had an enormous attack rate from scarlet fever, and the case mortality was also very great. Its birth-rate was the highest, and is indeed the only satisfactory rate for the year in the town. The infant mortality rate was below the average. The phthisis death-rate was much the lowest, and the diarrhoea rate was also low.

St. Edmund had a very low death-rate, being next lowest to Kingsthorpe. The case mortality from scarlet fever was at its highest, the birth rate was very low, being second only to the South Ward in this respect. The infant mortality rate was, however, exceptionally low, and the diarrhoea rate was below the average.

The Ward which comes out worst is the Castle Ward. Its known characteristics would lead one to expect that it is the least healthy Ward in town with the possible exception of parts of the South Ward, and the results show that it has not belied expectation. It must, however, be noted that it is unhealthy only relatively to the rest of Northampton, compared with the worser parts of some other towns it would appear healthy, except for infants.

The Ward which comes out best is Kingsthorpe, which in 1904 has shown itself to be an exceptionally healthy locality, as healthy as many a health resort,

THE BOROUGH HOSPITALS.

THE SMALLPOX HOSPITAL.—Four cases only were admitted during the year, one from Far Cotton Ward and the other three from St. James' Ward. One of the last three, an unvaccinated child, developed the disease in a confluent form and died.

The hospital was open on two occasions ; on each occasion a nurse was obtained from the Nursing Institute, Langham Place, and also one from the Borough Hospital.

Yearly admissions to the Smallpox Hospital since its erection in 1900 :—

1900.	1901.	1902.	1903.	1904.
—	—	2	38	4

THE BOROUGH HOSPITAL, Harboro' Road.—The cases admitted during 1904 were :—

Disease.	Total admitted.	Died.	Recovered.	Under treatment Jan. 1st, 1905..
Scarlet fever ..	.. 717	8	619	90

On January 1st, 1904 there were 76 patients in the hospital ; there were therefore in the wards during the year 793 persons.

Two patients were sent in by the Brixworth Rural Sanitary Authority, a fee of £2 2s. od. per week being charged for each.

Admissions from the various Wards :—

St. Michael.	Castle.	St. Crispin.	South.	North.
85	108	111	72	154
Kingsthorpe.	St. James'.	Far Cotton.	St. Edmund.	
43	58	43	74	

Yearly admissions to the Borough Hospital since 1892 :—

Year.	Scarlet fever.	Typhoid.	Diphtheria.	Smallpox.	Total for year.
1892	.. 126	.. 11	.. 1	.. 2	.. 140
1893	.. 66	.. —	.. —	.. 47	.. 113
1894	.. 200	.. 4	.. 2	.. —	.. 206
1895	.. 140	.. 10	.. 1	.. —	.. 151
1896	.. 165	.. 12	.. 1	.. —	.. 178
1897	.. 438	.. 1	.. —	.. —	.. 439
1898	.. 322	.. 16	.. 4	.. —	.. 342
1899	.. 232	.. 23	.. —	.. —	.. 255
1900	.. 71	.. 44	.. 1	.. —	.. 116
1901	.. 115	.. 41	.. 6	.. —	.. 162
1902	.. 124	.. 35	.. 15	.. —	.. 174
1903	.. 410	.. 7	.. 14	.. —	.. 431
1904	.. 717	.. —	.. —	.. —	.. 717
TOTALS	.. 3126	204	45	49	3424

Last year I wrote “ the Borough Hospital has been strained to the utmost of its resources by the epidemic of scarlet fever.” It was impossible then to foresee the enormous extension that the epidemic took during 1904. That the Hospital, at any rate, strove to cope with the increasing number of cases is proved by the enormous and unprecedented number of cases treated. On an earlier page I have given the percentage of the cases which were treated at the hospital, and it will there be found that except during the later months of the year a high proportion of those willing to go to hospital were admitted.

It is a fortunate circumstance that typhoid fever prevailed to a much less degree than usual, and that diphtheria, though above the average, only rose once for a short time to the point of an outbreak. The General Hospital assisted greatly by taking the most urgent cases of both diseases. All the beds at the Borough Hospital during the year were devoted to scarlet fever patients. By a re-arrangement of the wards more beds were made available, four distinct buildings being brought into use, and when stretched to its furthest point the accommodation provided amounted to 92 beds. Such a number of beds in the buildings provided would not perhaps be regarded as exceptional in a general hospital, but in an infectious disease hospital the result was that the beds were closer together than they should have been, and that each ward

held more than its proper number of patients. In wards which are necessarily filled with infection such conditions necessarily tend to injury of the patients, and although by the exercise of the greatest care of the patients, by frequent cleansing of the wards, by disinfection of infected articles, and by disinfection to some extent of the air of the wards by kettles producing steam impregnated with an antiseptic, the general mortality was brought to a very low point, nevertheless I am of opinion that many of the patients would not have suffered from the complications which attacked them, and that some at any rate of the return cases would have been avoided.

The increase of staff mentioned in my last report had brought the number of nurses employed to a level which was maintained throughout the year. There are now 16 nurses employed exclusive of the matron. Accommodation was provided for them as mentioned last year at the lodge of the cemetery near the hospital, and by utilising a ward for the purpose. The question of an addition to the administrative block was pressed on during the year, tenders were obtained, and at length the building was commenced at the beginning of 1905. It is now (April, 1905) steadily rising and will I hope be ready for occupation in the autumn of 1905.

I again desire to express my gratification at the cheerfulness with which the discomforts inseparable from the conditions necessarily obtaining from the crowded state of the administrative block are borne, and I hope to see the nursing staff well housed and thoroughly comfortable.

The mortality rate per cent. during the year was 1.11. A comparison of this figure with that of former years will show how very low this figure is, almost the lowest recorded since 1894. It is another proof of the wonderful mildness of the epidemic, to which the spread of the disease may be ascribed. The percentage rate for the town apart from the hospital-treated cases was 2.16, and the rate for all the cases taken together was 1.80. It should be remembered in comparing the hospital figures with those of the town generally, that during the greatest stress of the epidemic, the cases could not be removed at once, and that occasionally cases died during the first few days who would otherwise have first been removed. On the other hand, two of the deaths at the hospital occurred among children who were nearly moribund when removed.

Scarlet fever mortality rates per cent. at the hospital:—

1894.	1895.	1896.	1897.	1898.	1899.	1900.
1.0	3.6	2.6	4.1	2.5	3.0	2.8
1901.	1902.	1903.	1904.			
1.7	1.6	2.4	1.1			

WELFORD ROAD HOSPITAL.—The enormous increase in the number of cases notified during October made it clear that the accommodation available at this hospital should be utilised. This hospital was taken over by the Borough at the time of the amalgamation with the outlying districts. It is a small hospital, and not more than 26 patients could be accommodated at any one time, and even this number is excessive for its size. The matter was brought before the Sanitary Committee in October, and as a matter of urgency they recommended the Finance Committee to authorise the expenditure necessary to open the buildings for the reception of the patients. The Finance Committee agreed to this recommendation, and the Medical Officer was instructed to obtain the necessary furniture, and engage matron, nurses, porter, etc. The cost of the furnishing came to a little over £200, and the first case was admitted on November 22nd, before the furnishing was quite complete. From that date till December 31st, 29 cases in all were admitted, a very welcome addition to our resources at the height of the epidemic. I am glad to say that no deaths took place among these patients. The matron obtained was the senior nurse at the Harboro' Road Hospital, and it is a pleasure to me to be able to state that the choice has been fully justified.

COMPLICATIONS.—The following complications occurred among the 746 cases in both hospitals. Each complication was recorded when it was present even in the smallest degree, hence in the vast majority of cases these complications were of slight importance. Many of the cases had more than one complication, yet each complication appears separately in the list. Thus 126 cases produced 336 complications. One case had six complications, 8 had five, 14 had four, and 27 had three.

Albuminuria occurred in 81 cases, of which

	22	lasted under one week.
11	„	two weeks.
13	„	three „
10	„	four „
10	„	over four „
15	„	for an unrecorded period.

Swollen glands	„	80 cases.	
Rhinorrhœa	„	44	„
Otorrhœa, left	„	37	„
„ right	„	28	„
„ both right and left	„	22	„
Cardiac murmurs	„	28	„
Secondary rash	„	17	„
Tonsillitis (not of the primary attack)	„	16	„
Rheumatism	„	15	„
Eczema	„	13	„
Severe angina	„	11	„
Abscess in neck	„	11	„
Epistaxis	„	10	„
Ringworm	„	9	„ Present on admission.
Impetigo	„	7	„ Present on admission.
Seborrhœa	„	7	„ Present on admission.
Cardiac irregularity	„	6	„
Xerodermia	„	5	„ Present on admission.
Mastoid abscess	„	5	„
Abscess elsewhere	„	3	„
Rickets	„	5	„ Present on admission.
Piles	„	3	„ Present on admission.
Diarrhœa	„	4	„
Intertrigo	„	5	„ Present on admission as a rule.
Conjunctivitis	„	6	„ Present on admission.
Bronchitis	„	3	„
Varicella	„	4	„
Psoriasis	„	2	„ Present on admission.
Dacryocystitis	„	2	„
Urticaria	„	7	„
Herpes	„	2	„
Whitlow	„	5	„
Erythema fugax	„	1	„
Prolapsus recti	„	1	„
Phlyctenula	„	1	„
Croupous pneumonia	„	1	„
Scabies	„	1	„
Mania	„	1	„
Pleurisy	„	1	„
Haemoptysis	„	1	„

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Albuminuria is really an indication of one form of Scarlet Fever, and is generally unavoidable.

Rhinorrhœa, Otorrhœa, and swollen glands, are often unavoidable, but in other cases they indicate that owing to the number of patients in the wards the amount of infective material present had reached a high point. When this was indicated the cause was investigated and measures of disinfection taken. In other cases they indicate some carelessness or forgetfulness on the part of the nurse, which was searched for and checked.

The secondary rashes are of great interest, not as being in themselves serious, for as a rule they disappeared in a day or two without causing other symptoms, but as pointing to the probability that there was another disease as well as scarlet fever in the wards. This disease is rubeola, or German measles. Towards the end of the year the great number of cases reported together with the extremely mild character of those removed to hospital raised in my mind the suspicion that cases of rubeola were being mistaken for scarlet fever. On enquiring of some of the medical practitioners of the town I was informed that German measles was prevalent, and that in many cases there was great difficulty in deciding whether a case was one of scarlet fever or not. I think it not improbable, therefore, that some of the cases notified at the end of the year were really cases of rubeola and not scarlet fever.

There is another fact which is of the greatest interest in the diagnosis of scarlet fever. During the year 39 cases were admitted in which it was impossible for me to come to a decision whether the cases had scarlet fever or not. They presented no sign of it on admission, though the parents stated that there had been a rash, and as a rule a slight sore throat, nor did they desquamate while in hospital. These cases, however, did not catch scarlet fever in the hospital, and in some cases they had brothers or sisters with unmistakable scarlet fever. I have, therefore, no doubt that most of them were cases of scarlatina frusta, where the disease is so mild that desquamation does not occur.

Desquamation is not an invariable result of scarlet fever, it is rather the result of the general reddening and mild inflammation of the skin, and occurs in other diseases; it is therefore easy to understand that the disease may occur without it. The occurrence of such cases shows how easy it is to overlook the disease, and so cause it to spread.

There is one other figure I have still to mention which is of serious import. No less than 23 cases appear to have caught the disease in hospital. On admission they presented no sign of the disease, though the medical man who had seen them had doubtless seen a slight rash, and possibly there had been some soreness of the throat. During the prevalence of an epidemic I fear that diagnosis is apt to be hasty, and that on sometimes very insecure grounds a case of illness is put to the account of the prevailing disease. If the case be treated at home no harm is done, as the child is merely needlessly isolated, but if it be sent to a hospital the risk of its catching the disease in a severe form is very great, for in a hospital there is concentration of infection. I regret to say that one or two of these cases died. To avoid such a terrible mishap, there should be means of isolation provided in the hospital. It is sometimes impossible for the medical superintendent to say whether a child admitted has scarlet fever or not. The case cannot be removed till, at earliest, two to four days after the onset of the disease, and sometimes it is later. During the period between the disappearance of the rash and the onset of desquamation there is often a period when no sign of disease is present, but in most of these cases the occurrence of desquamation justifies the opinion of the medical man who notified the case. It would, therefore, be no remedy to refuse to admit a doubtful case, as in the majority of cases the result would be to send home a child in an infectious state, capable of spreading the disease broadcast, for no home precautions would then be taken. The true remedy is to construct another block in the hospital grounds in which all doubtful cases could be detained until it was possible to come to a diagnosis. This addition to our hospital accommodation I earnestly urge on the Council.

DISINFECTION.—I described fully last year the precautions taken to prevent any patient carrying away infection from the hospital. These have been carried out rigidly during the year, the only change being that in addition to the methods described, the patient's body is rubbed with oil of eucalyptus two or three times before discharge, on the last occasion just after the discharging bath. This change was made during the latter part of the year and I am inclined to believe with good result. In spite of all our precautions return cases have occurred, but should the epidemic diminish, permitting the wards to have a more normal number of beds in them, I believe the return cases will diminish in much greater proportion.

Before leaving the subject of the hospital, I desire to say how much pleasure it gives me to refer to the willing service rendered by the matron

and nursing staff. It is an interesting fact that the whole staff, including both matron and nurses, has been obtained from among the inhabitants of the town. There is no nurse now on the staff of the Harboro' Road Hospital who was not originally trained at the hospital, a circumstance to which I attribute much of the harmony which now exists.

As I prophesied last year, some of the probationers engaged during 1903 have proved highly efficient and reliable ; all have worked hard and borne the many difficulties of the place and the work with little or no complaint.

WATER SUPPLY.—This has been in the hands of the Corporation since the year 1884. There are two sources from which Northampton derives its supply of water ; these are the reservoir at Ravensthorpe and the Billing Road well.

THE RAVENSTHORPE RESERVOIR.—This is situated about eight miles from Northampton ; it receives the surface water from a gathering ground of about 3,000 acres. The capacity of the reservoir is about 400,000,000 gallons. The gathering ground is mainly grass-land, but is in part cultivated land. The population within its boundaries numbers about 100.

Special arrangements have been made dealing with the sewage from this population. The great protection against danger from a gathering ground, which is by no means of the high standard attainable among hilly countries where the population is sparse and the ground unsuited to agriculture, is the collection of the water in a large reservoir where the purifying agencies of sun, air, and even the living inhabitants of the water have time to exert their effect. To supplement these, the action of filters must and has been added, and the result is a water which reaches a fair standard of purity. Constant watchfulness is required to maintain this standard.

The Ravensthorpe Reservoir contains when full, as stated, about 400,000,000 gallons. Of this amount, probably 40,000,000 gallons would not be available for supply. The average daily quantity of water supplied to the town during the year ending March 25th, 1905, was 1,432,000 gallons. The reservoir contains when full on the present consumption about 250 days supply.

On January 1st, 1903, the level of the water in the reservoir stood 10 feet 7 inches below the sill of the dam ; on January 1st, 1904, owing to the excessive rainfall of the previous year, the reservoir was overflowing ; on January 1st, 1905, after a much drier year, the level was 5 feet below the overflow. The reservoir is therefore sufficient only in wet years.

BILLING ROAD WELL.—This is a “ deep ” well, penetrating as it does about 150 feet of impervious clay on its way to the water-bearing stratum, from which it derives its perennial flow. The total depth of the well is 172 feet, and over 20 feet of this is constantly occupied with water which the constant pumping operations do not reduce so long as a certain limit is not passed. This limit is about 400,000 gallons daily. The water is pure, but like all deep-well water is hard ; a fairly satisfactory water is produced by mixing it with the water derived from the Ravensthorpe reservoir.

As pointed out last year, the consumption of water per head of the population is much below what it should be, amounting only to about 16 gallons daily. It has been reckoned that 30 gallons per head per day is a sufficient supply. The small requirements of the town indicate a defective appreciation of the virtues of cleanliness, personal and household, especially as regards the flushing of water closets. That closets should be allowed to exist unprovided with flushing apparatus is a state of affairs which calls for strong condemnation. Hand flushing is not carried out properly by the poorer classes, and the result is that the Sanitary Inspectors have frequent cause to complain of the state of the closets in the houses they visit. I count it a misfortune that the Act under which the Corporation supplies water encourages the use of such defective arrangements by allowing an extra charge for flushing cisterns. A flushing cistern ought to be considered a necessity, and no extra charge should be made for its use.

THE FLUSHING OF SEWERS, WATERING OF STREETS, ETC.—Water for these purposes need not be of the purity demanded for drinking water, and a special supply for these purposes may well be permitted. The scheme mentioned last year for utilising water from the Tower well and other sources has come into operation, and several miles of piping have been laid. The present amount of water available under this scheme is about 200,000 gallons a day, when necessary, the Water Engineer informs me, this amount can be largely increased at a small cost. The scheme is of advantage from the point of view of saving the potable water, a desirable matter considering

how limited is the supply available, but apart from this the more frequent flushing of the sewers of the town is urgently required. Constant complaints are being received by the Sanitary Inspectors and at this office of the offensive emanations from the street grids communicating with the sewers. These emanations are often due to the accumulation of decomposing matter in the sewers, and this can be removed by flushing, but it is not proper that each case should be remedied as it arises, provision ought to be made for the taking away of the cause of complaint. But even if solid matter does not accumulate, the gases generated in the slow moving masses of sewage in the main culverts tend to rise through the street sewers, and are given off at the high levels ; thus parts of the town like St. Crispin Ward, East Park Parade, etc., find disagreeable odours not uncommon. The question should be taken in hand as a whole, for even if the town should not increase in size the nuisance is likely to increase. In every reconstruction of drains under the supervision of this Office an intercepting trap is regarded as a *sine qua non*. Many of these private drains before reconstruction were found in virtue of the absence of such traps to be acting as sewer ventilators. As each of these channels of sewer ventilation is removed the more frequent will be the emanation of noxious gases from the street grids. Sewer gas, while not now believed to be able to produce specific disease can cause a general condition of ill health, and undoubtedly predisposes to the attacks of any disease, and especially to such diseases as typhoid fever and diphtheria. It has been stated that the distribution of the cases during the epidemic of typhoid at Maidstone some years ago could only be accounted for by a reference to the position of the sewer ventilators.

There is no one panacea for the evil which exists, and the application of several methods is no doubt necessary. Among these may be mentioned the abolition of dead ends of sewers, where possible, by connecting them with other sewers ; the provision of automatic flushing tanks fed from the special supply of water provided ; these should be placed at the remaining dead ends and at other suitable points ; the erection of ventilating shafts, either so lofty as to carry the gases to a height where they will be so much diluted with fresh air as to become innocuous, or combined with gas jets for lighting purposes so that they may be transformed to simple inoffensive gases by the high temperature of the burners through which they pass, etc.

I have brought the question before the Sanitary Committee and they have instructed the Borough Engineer to report. I trust the matter will not be shelved.

BACTERIOLOGICAL EXAMINATIONS.—Last year I advocated the establishment of a bacteriological laboratory, and gave the reasons why I considered it desirable. I pointed out that the examination of water, of sputum for tubercle bacilli, of throat swabs for diphtheria bacilli, and of blood by the Widal test could all be made in such a laboratory. Unfortunately the epidemic of scarlet fever, demanding constant attention as it did, forcibly turned my attention from the subject, and last year certainly it would have been impossible for me to do any satisfactory laboratory work. Nevertheless my opinion as to the desirability of such a laboratory is in no way changed. It is true that arrangements have been made with the Lister Institute for the examination of pathological substances suspected to contain definite bacilli, and fortunately it has not been necessary as yet to utilise these arrangements to any extent. But the need may arise at any time, and it will be found an expensive matter if all the chemical and bacteriological testing required is to be done out of Northampton. Separate installations for the Water Engineer and the Medical Officer of Health are quite unnecessary, all that is suggested is a single place in which both could work. It need not be costly, and would, I believe, well repay anything spent on it.

METEOROLOGY.—For the first time I am able to report on this subject, and this feature of the report I hope to make permanent. The table has been constructed from figures supplied to me by Mr. Primavesi, optician, Gold Street.

An examination of the table shows that 1904 was on the whole a dry warm year. The total rainfall of just over 22 inches contrasts with 32 inches recorded during 1903. The driest month of the twelve was June both as regards total rainfall and number of days on which rain fell. February was the wettest month, though both January and December showed one day more on which rain fell. At least two summer rainstorms occurred, one on July 25th, when 1.70 inches of rain fell, and the other on August 22nd, when 1.20 inches fell.

The warmest month of the twelve was July. I have not been able to obtain the figures showing the mean temperature for the first six months of the year, but there can be little doubt in the minds of those who remember last July, that it was decidedly the warmest month of the year. The highest

MONTH.	RAINFALL.				TEMPERATURE.						DIRECTION OF WIND.				
	Total inches.	Greatest in 24 hours		Days in which 0.01 or more fell.	Mean.	Maximum.		Minimum.		No. of Nights at or below 32 deg.	S.W. Quadrant including W. Days.	S.E. Quadrant including S. Days.	N.E. Quadrant including E. Days.	N.W. Quadrant including W. Days.	Fog.
		Depth	Date.			Deg.	Date.	Deg.	Date.						
January	2.35	0.78	31	16	..	53.4	13	27.8	23	13	..	..	..	..	..
February	3.34	0.52	3 & 9	15	..	53.1	20	27.1	29	10	..	..	..	..	..
March	1.59	0.40	28	13	..	60.8	9	27.4	12	9	..	..	..	..	..
April	1.08	0.40	22	9	..	66.7	18	36.8	26	..	..	..	..	..	..
May	2.15	0.40	27	12	..	73.8	16	35.6	8	..	..	..	..	..	..
June	0.55	0.21	16	5	..	79.7	30	42.4	28	..	..	..	..	..	..
July	2.78	1.70	25	10	66.61	85.3	17	50.1	8	..	12	6	9	4	..
August	2.75	1.20	22	7	61.79	88.6	4	41.7	21	..	17	7	2	5	..
September	2.04	0.63	30	11	56.3	75.0	5	39.6	27	..	7	8	9	6	..
October	0.69	0.31	16	9	50.32	69.4	18	33.3	13	..	8	4	8	11	..
November	1.32	0.27	6	11	40.78	59.4	9	16.2	24	9	15	3	2	10	..
December	1.39	0.27	9	16	38.77	54.6	4	20.4	23	10	14	6	4	6	1 day
Year 1904	22.03	1.70	July 25	134		88.6	Aug. 4	16.2	Nov. 24	51					

temperature, however, was reached on August 4th, viz., 88.6. It will be remembered that on this or the following day a violent thunderstorm took place which cooled the air to a refreshing degree.

The coldest month of the year was January, as on 13 nights the temperature fell below freezing point, but the actual lowest temperature recorded, 16.2°, occurred on November 24th. December showed lower temperatures than January, but there were not so many nights when the temperature fell below freezing point.

I have obtained the direction of the wind for the last six months of the year only. The predominance of westerly and south-westerly winds is very obvious. These are the prevailing winds on the British Isles.

The bearing of these facts on the public health is at present obscure, but that they have a decided bearing is indicated in the study I have made in an earlier part of the report of the mortality from diarrhœa. Dr. Tatham, in his letter to the Registrar-General, printed in the Sixty-sixth Annual Report of the Registrar-General, says: "It may eventually be found that many of the ailments incidental to humanity depend for their prevalence on variations on meteorological conditions more closely than is at present thought possible."

SANITARY ADMINISTRATION.

I have again to express my appreciation of the work done by the Sanitary Inspectors. The year has been one of exceptional difficulty ; so much time was taken up in the investigation of cases of scarlet fever that as much work as is desirable on general sanitary lines could not be undertaken. It will be found, however, that a considerable amount of work has been accomplished, and that the epidemic has not been used as an excuse for presenting a small report. I have found all the inspectors attentive to their duties, though they vary as regards the amount of work accomplished, the tact with which their duties were carried out, and the care and method shown in their reports. It is right that I should single out the Chief Inspector, Mr. White, for special commendation. Throughout the year he has assisted me ably. I can always be sure that any work entrusted to him will be carried out with thoroughness, with ability, and with the minimum of friction. He has been of special assistance in overseeing the work of the disinfectors and removal officer.

I have made frequent reference throughout the report to the work of the Health Visitor, Miss Gough. I consider that a Health Visitor who combines with this the knowledge and powers of a sanitary inspector is a valuable addition to a Public Health department. An outline of her duties was given last year, and these she has carried out efficiently. Her services were also utilised for a time in combating scarlet fever. Her duties as regards house to house visitation have necessarily been somewhat in abeyance, but this has been compensated for by the numerous inspections she has made of houses in connection with her other work.

SPECIAL REPORTS BY THE SANITARY INSPECTORS.—The following is a list of the special reports of importance made in writing to me by the Inspectors during the year. I have marked with an asterisk those which were specially well done ; in many of the other cases no opening was given to the inspector for the display of any special energy.

REPORT.	INSPECTOR.	DATE.	REMARKS.
66, 68, Sheep Street ..	Sowerbutts	1-04	Drainage, plan.
38-44, Bearward Street	Sowerbutts	1-04	„ „
Factory Chimney, St. James' End	Harper ..	1-04	Smoke observations.
32-36, Doddridge Street	Sowerbutts	1-04	Drainage, plan.
2, Upper Cross Street	Sowerbutts	14-1-04	Slaughterhouse.
Courts near Regent Street	Miss Gough	19-1-04	House to house inspection

REPORT.	INSPECTOR.	DATE.	REMARKS.
*Factory, St. James' End	White ..	20-1-04	Sanitary conveniences.
*Tanning Premises ..	Harper ..	28-1-04	Effluent discharge.
Offensive trades ..	Sowerbutts	4-2-04	„ „
*The Riding	Sowerbutts	4-2-04	House to house inspection
11, Gold Street ..	Sowerbutts	19-2-04	Drainage
15, Colwyn Road ..	Barker ..	24-2-04	
Duke of Clarence ..	Sowerbutts	3-04	Sanitary condition of licensed premises.
Three Tuns.			
Trooper			
The Boot			
Eagle and Child ..			
Waggon and Horses ..			
Spread Eagle			
Prince of Wales ..			
Bull and Butcher ..			
Half Moon			
*Factory, St. James' End	Harper ..	11-3-04	Sanitary conveniences.
St. James' Vicarage ..	Harper	12-3-04	Drainage.
Adnitt's Wharf Yard ..	Sowerbutts	16-3-04	„
2, Knightley Road ..	Harper ..	9-4-04	Suitability for milk pur- veyor.
Factory, Victoria Road	White ..	26-4-04	Sanitary conveniences.
„ St. James' End	Miss Gough	28-4-04	„ „
1, Royal Terrace ..	Harper ..	29-4-04	Drainage.
17, Austin Street ..	Barker ..	2-5-04	Fitness for habitation
Street manhole	Harper ..	9-5-04	Condition.
*43, 45, Kingswell Road	Barker ..	17-6-04	Fitness for habitation
24, Clarke Road ..	White ..	17-6-04	Suspected diphtheria
*Dairies and cowsheds in No. 2 district	Harper ..	6-04	Condition and require- ments.
*Dairies and cowsheds in No. 1 district	White ..	29-6-04	„ „
3, 5, Gt. Russell Street	Barker ..	9-7-04	Drainage plan.
Workshops	Sowerbutts	12-8-04	Not supplied with town water
„	Barker ..	18-8-04	„ „
„	Harper ..	18-8-04	„ „
*Smallpox outbreak ..	White ..	28-8-04	Contacts, etc.

REPORT.	INSPECTOR.	DATE.	REMARKS.
Urinal, Bearward Street	Harper ..	19-10-04	Condition.
*Common Lodging House	Harper ..	24-10-04	Description
*South View, St. George's Terrace	White ..	24-10-04	Drainage.
51, Abbey Street ..	Harper ..	7-11-04	Employment of occupant.
Slaughter houses ..	White ..	21-11-04	Annual licenses.
*Vernon Terrace Schools	White ..	21-11-04	Sanitary condition.
Factory, 3A, Market Street	White ..	26-11-04	Condition reported to Guardians.
Assistant disinfectors ..	White ..	29-11-04	Disinfecting work of department.
*Factory Chimney, Butcher's Yard	Barker ..	12-12-04	Smoke nuisance.

INSANITARY DWELLINGS.—The number of dwellings reported to the Sanitary Authority during the year was eighteen. These were :—

17, Austin Street.

43, 45, Kingswell Road, Kingsthorpe.

25-39, The Riding.

The defects at 17 Austin Street may be summed up as general dilapidation. The most notable feature was the state of one of the partition walls which was in actual danger of falling. The defects have been remedied.

Nos. 43 and 45 Kingswell Road were dirty, dilapidated and badly ventilated; there was no closet accommodation. These houses have been closed.

Nos. 25 to 39 The Riding were marked by much the same defects throughout, dampness, and want of proper ventilation. The rectification of these houses has been delayed owing to the possibility of a change doing away with them altogether. Negotiations for this have fallen through and the owner is about to render them suitable for habitation as far as possible.

FACTORIES AND WORKSHOPS.—The following table is in the form required by the Home Office. It gives the principal facts. Little need be added except to point out that in spite of the prevalence of scarlet fever during the year to an abnormal extent, a considerable amount of work under the Factory and Workshops Act, 1901, was carried out.

FACTORY AND WORKSHOP ACT.**I. INSPECTION.**

PREMISES.	INSPEC- TIONS.	NUMBER OF WRITTEN NOTICES.	PROSECU- TIONS.
Factories (including factory laundries ..	18	12	..
Workshops (including workshop laun- dries)	568	146	..
Workplaces	3	1	..
Homeworkers' premises	232	42	..
TOTAL	821	201	..

2. DEFECTS FOUND.

PARTICULARS.	NUMBER OF DEFECTS FOUND.	REME- DIED.	REFERRED NUMBER TO H.M. OF PROSE- CUTIONS.
Nuisances under the Public Health Acts :—			
Want of cleanliness	86	86	.. ..
Want of ventilation .. ..	..	..	.. ..
Overcrowding	11	11	.. ..
Want of drainage of floors .. ..	..	..	.. ..
Other nuisances	82	81	.. ..
Sanitary accommodations { insufficient	22	22	.. ..
{ unsuitable or defective	23	23	.. ..
{ not separate for sexes	2	2	.. ..

**Offences under the Factory and
Workshop Act :—**

Illegal occupation of under- ground bakehouse (S. 101)
---	----	----	----	----

PARTICULARS.	NUMBER OF DEFECTS				NUMBER		
	FOUND.	REME- DIED.	REFERRED TO H.M. INSPECTOR.	OF PROSE- CUTIONS.			
Breach of special sanitary re- quirements for bakehouses (SS. 97—100) .. .. .	..	..	..	..	..	..	..
Failure as regards lists of out- workers (S. 107)	27	26	..	..	
Giving out work to be done in premises which are							
unwholesome (S. 108) .. .. .	..	..	..	..
infected (S. 110) .. .. .	..	..	..	..
Allowing wearing apparel to be made in premises infected by scarlet fever or smallpox(S.109) .. .. .	..	..	..	..
Other offences	4	4	..	..	
TOTAL	257	255	..	..	

3. OTHER MATTERS.

CLASS.	NUMBER.			
Matters notified to H.M. Inspector of Factories :—				
Failure to fix abstract of Factory and Workshop Act (S. 133)	..	27		
Action taken in matters referred by H.M. Inspectors as remediable under the Public Health Acts, but not under the Factory Act (S. 5)	{ Notified by H.M. In- spectors Reports (of action taken) sent to H.M. Inspectors ..	7 6		
Other	7		
Underground bakehouses (S. 101) :—				
In use during 1903	2		
Certificates granted in 1903		
„ „ in 1904	1		
In use at the end of 1904	1		

Homework :—

							NUMBER OF	
Lists of outworkers (S. 107) :—							OUT-	
							LISTS.	WORKERS.
Lists received	..	..	..	..	..	..	12	183
Addresses of out-workers forwarded to other authorities								27
„ „ received from other authorities..								5
							WEARING	OTHER.
							APPAREL.	
Homework in unwholesome or infected premises :—								
Notices prohibiting homework in unwholesome premises (S. 108)	..	..	..	..	..	..		..
Cases of infectious disease notified in homeworkers' premises	..	..	..	..	..	..	3	22
Orders prohibiting homework in infected premises (S. 110)	..	..	..	..	..	..	..	..
Workshops on the Register (S. 131) at the end of 1904	..					..	..	428
Domestic workshops	..	..	..	..	..	..	..	401
Total number of workshops on the Register	..					..	..	829

BAKEHOUSES.—The sanitary condition of the bakehouses of the Borough was dealt with fully last year in a special report by the Chief Inspector, Mr. White. There are now 80 bakehouses on the Register ; these have been inspected during the year.

SHOP HOURS ACTS—The Inspector appointed under these Acts, Miss Gough, reports that she paid 520 visits during the year in connection with this department of her work. She found no infringement of the law as regards hours of labour, but in a certain number of shops there was a great difficulty in securing that the necessary notice should be exhibited. Finally a circular letter was sent by the Medical Officer of Health to the proprietors of those shops who had failed in this particular, warning them of the penalty attached to infringement of the law. This had the desired effect, and the Inspector reports that she can confidently say that now in every shop in which she knows of the employment of a young person the notice is exhibited.

OFFENSIVE TRADES.—There are only three premises where these are carried on, and little complaint has been made about any of them. The premises have been inspected.

NEW BUILDINGS.—The Borough Surveyor has kindly supplied me with the following information :—

Plans were deposited during 1904 for :—

New Houses	..	..	..	..	..	172
School	..	..	..	..	..	1
Factories and Workshops	..	..	..	..	..	3
Warehouses	..	..	..	..	..	5
Stables	..	..	..	..	..	6
Alterations to existing premises	..	..	..	..	..	26
Additions to Premises	..	..	..	..	..	57
Sheds	..	..	..	..	..	2
Temporary Buildings	..	..	..	..	..	2
New Rooms for Church purposes	..	..	..	..	..	2
						276

SLAUGHTER HOUSES.—There are 65 of these on the register. All have been regularly inspected.

FOOD INSPECTION.—The following articles ascertained to be unfit for food were voluntarily surrendered to the officials of the Health department and destroyed :—

					CWT.	QRS.	LBS.
Beef	..	..	..	..	13	0	0
Fish	..	..	..	..	4	2	20
Haddock (dried)	..	..	..	..	1	2	0
Turkeys, 4	..	..	..	..	0	2	8
Salmon, 1 tin	..	..	..	..	..	..	..
Fruit	..	..	..	..	0	0	8

DRAIN TESTING—In the following houses the hydraulic or the smoke test was applied to test the efficiency of the drainage system :—

Albion House, Albion place.
 St. Giles' Square.
 Moat Street, Nos. 3, 5.
 Abington Street, Nos. 3, 82, 47, 106, 108, 110.
 "Craigard," Queen's Park Parade.
 St. James' Vicarage.
 Horsemarket, Nos. 39, 41.
 Herbert Street, Nos. 19, 21, 23, 25, 27, 29.
 Spring Lane Schools.
 "Newbold House," Cheyne Walk.
 Wood Street, No. 28.
 St. Peter's Rectory.
 St. Giles' Street, No. 73.
 Royal Terrace, No. 1.
 Marriott Street, No. 2.
 Park Road, Nos. 148, 150, 152.
 St. James' Road, Nos. 71, 73, 75.
 "Field Head," The Avenue.
 Burns Street, No. 25.
 Cloutsham Street, Nos. 49, 51.
 Collingwood Road, No. 28.
 Clare Street, Nos. 13, 15.
 "Parkfield," Colwyn Road.
 Great Russell Street, Nos. 3, 5.
 Hunter Street, No. 39.
 Hood Street, No. 2.
 Kingsley Park Terrace, Nos. 10, 20.
 "Vigorina," Queen's Park Parade.
 Shakespeare Road, Nos. 42, 44.
 Somerset Street, Nos. 17, 19, 14.
 St. Edmund's Road, No. 2.
 Vernon Street, Nos. 20, 22.
 Upper Thrift Street, No. 79.
 York Road, No. 50.
 Derby Road, Nos. 74, 76, 84, 86.
 Abington Avenue, Nos. 61, 54.

St. Edmund's Street, No. 15.
 Holly Road, Nos. 14, 8, 73, 90.
 York Road, No. 44.
 Ivy Road, No. 17.
 St. Michael's Avenue, No. 6.
 Perry Street, No. 5.
 Wellingboro' Road, Nos. 40, 137.
 St. Edmund's Street, Nos. 31, 33.
 Bouverie Street, No. 7.
 Market Street, Nos. 3, 13.
 St. George's Avenue, "South View."
 Cyril Street, No. 61.
 Exeter Road, Nos. 39, 41.
 Brunswick Street, No. 35.
 Denmark Road, No. 34.

RECONSTRUCTION OF DRAINS.—Defects were found in the drainage systems of the following houses; these were rectified by reconstruction of the drains under the supervision of the Health department:—

Bridge Street, Nos. 46, 48, 52.
 Horsemarket, Nos. 15, 17, 19, 39, 41.
 St. Andrew's Street, Nos. 24, 26, 30, 32, 70.
 Broad Street, Factory.
 Bearward Street, Nos. 38, 40, 42, 44.
 Bullhead Lane, Nos. 20, 25, 27, 29.
 Albert Street, Nos. 4, 6.
 Derngate, Nos. 1, 3, 10.
 Wood Street, Nos. 15, 17.
 Moat Street, Nos. 3, 5.
 Abington Street, Nos. 3, 82, 106, 108, 110.
 ,, ,, Providence Chapel.
 ,, ,, Blind Institution.
 York Road, Nos. 23, 24, 25.
 Elizabeth Terrace, Nos. 3, 4.
 Old Towcester Road, Nos. 10, 11, 12.
 Sheep Street, Nos. 66, 68.
 Swan Street, No. 1.
 College Street, No. 53.
 Weston Street, Nos. 8, 10, 12.

Herbert Street, Nos. 19, 21, 23, 25, 27, 29, 31, 33.
 Bath Street, Nos. 33, 35.
 Doddridge Street, Nos. 32, 33, 34, 35, 36.
 Kerr Street, Nos. 13, 15, 31, 33.
 Castle Terrace, Nos. 8, 9, 10, 11.
 Fitzroy Street, Nos. 1, 3, 5, 7.
 Regent Street, No. 1.
 Freeschool Street, Nos. 18, 20, 22, 24, 26, 28
 The Green, Nos. 23, 24, 25, 26.
 Cheyne Walk, "Newbold House."
 St. Giles' Street, No. 73.
 Queen Street, Nos. 6, 7.
 St. Peter's Rectory.
 Mercer's Row, Nos. 2a, 9, 10, 11.
 Spencer Parade, No. 9.
 St. Giles' Square, No. 9.
 Guildhall Road, No. 13.
 Commercial Street, Nos. 11, 13, 15, 17.
 Lorne Road, Nos. 18, 20, 22, 24, 26.
 Adelaide Street, Nos. 11, 13.
 Kingsthorpe Hollow, Nos. 50, 51.
 St. James' Vicarage.
 Langham Place, No. 2.
 Royal Terrace, No. 1.
 Craven Street, Nos. 29, 31, 33, 35.
 St. George's Street, Nos. 16, 18, 20, 22.
 "The Forest Oak," Lawrence Street.
 Lawrence Street, Nos. 7, 9, 11, 13, 56.
 Gladstone Terrace, Nos. 52, 54, 56, 58.
 Harding Terrace, Nos. 12, 14, 16, 18, 20, 22, 24.
 Park Road, Nos. 148, 150, 152.
 Leicester Terrace, No. 2.
 Upper Mounts, West & Co.'s Factory.
 Adelaide Terrace, No. 1.
 Burns Street, Nos. 6, 8, 25.
 Cowper Street, Nos. 56, 58.
 Colwyn Road, No. 15.
 Earl Street, Nos. 36, 38, 40, 42.
 Great Russell Street, Nos. 3, 5.

Kingsley Park Terrace, No. 20.
 Kettering Road, Nos. 69, 171, 173, 175, 177, 179, 181, 183,
 185, 187, 189.
 Overstone Road, Nos. 26, 28.
 Queen's Road, No. 32.
 Somerset Street, No. 17.
 Stockley Street, Nos. 9, 11.
 Exeter Road, Nos. 39, 41.
 Victoria Road, Nos. 47, 49, 52.
 Derby Road, Nos. 84, 86.
 Cyril Street, Nos. 44, 46.
 Vernon Street, Nos. 20, 22.
 Artizan Road, No. 43.
 Upper Thrift Street, Nos. 75, 77, 79.
 St. Edmund's Road, Nos. 4, 1a.
 Holly Road, Nos. 8, 12, 14.
 York Road, Nos. 44, 50, 37.
 Abington Avenue, Nos. 44, 46, 61.
 Denmark Road, Nos. 55, 57.
 St. Edmund's Street, No. 31.
 Bouverie Street, No. 7.
 St. George's Avenue, "South View."
 The Drapery, Nos. 8, 10,
 St. Michael's Mount, No. 22.

HOUSE TO HOUSE INSPECTION.—In pursuance of the statutory duty to seek for nuisances, the Inspectors visited the houses in the streets and passages here mentioned. Measures were taken to remedy any defects found.

	HOUSES.					
Cliff Row	15
Fitzroy Terrace	12
Cromwell Street	24
Riding	49
Scarletwell Street and courts	138
Bath Street and Courts	108
Fort Street	48
Chalk Lane and courts	42
Castle Terrace	20

HOUSES.

Fitzroy Street	..	..	..	..	..	37
Moat Street	..	..	..	..	..	21
Bristol Street	..	..	..	..	..	34
Little Cross Street	..	..	..	..	..	38
Lower Cross Street	..	..	..	..	..	10
Todd's Lane	..	..	..	..	..	34
Kinburn Place	..	..	..	..	..	33
St. Andrew's Place	..	..	..	..	..	17
Gordon Street (portion of)			..	..	..	34
Nelson Street,	..	..	..	..	..	30
„ „ No. 1 Square			..	..	..	28
„ „ No. 2 „			..	..	..	28
„ „ No. 3 „			..	..	..	28
Gladstone Terrace	..	..	..	..	..	88
Salisbury Street	..	..	..	..	..	71
Ash Street	..	..	..	..	..	24
Devonshire Street	..	..	..	..	..	27
Stanley Street	..	..	..	..	..	78
Alcombe Road	..	..	..	..	..	84
Cloutsham Street	..	..	..	..	..	91
Harborough Road	..	..	..	..	..	7
Sunnyside	..	..	..	..	..	6
Somerset Street	..	..	..	..	..	67
Derby Road	..	..	..	..	..	23
Brunswick Street	..	..	..	..	..	22
Roe Road	..	..	..	..	..	56
West Street	..	..	..	..	..	16
Vernon Street	..	..	..	..	..	71
Market Street	..	..	..	..	..	188
Scarletwell Terrace	..	..	..	..	..	13
Upper Cross Street	..	..	..	..	..	4
Chalk Place	..	..	..	..	..	9

FOOD AND DRUGS ACTS.

Summary of articles analysed under the Food and Drugs Acts, and numbers adulterated during the year 1904 :—

	NUMBER OF SAMPLES		
	PURCHASED.	GENUINE.	ADULTERATED.
New Milk	110	93	17
Skim Milk.....	5	2	3
Butter	22	19	3
Cheese	9	9	0
Cream Cheese.....	1	0	1
Condensed Milk	2	2	0
Bread and Butter.....	3	3	0
Bread	2	2	0
Honey	2	2	0
Cocoa	2	2	0
Lard	1	1	0
Cornflour	1	1	0
Chocolate Powder	1	1	0
Jam	1	1	0
Treacle	2	2	0
Beef Suet.....	1	1	0
Rice	1	1	0
Ground Rice.....	2	2	0
Castor Sugar.....	1	1	0
Coffee	1	1	0
Oatmeal	1	1	0
Mustard	2	2	0
Lime Juice	2	0	2
Chocolate Rock.....	1	1	0
Pepper.....	3	3	0
Potted Shrimps.....	1	0	1
Flour.....	1	1	0
Green Peas	1	0	1
Lime Water	1	1	0
Sweetmeats	1	1	0
Vinegar.....	1	1	0
Cotton-seed Oil	1	1	0
Linseed Oil.....	1	1	0

	NUMBER OF SAMPLES		
	PURCHASED.	GENUINE.	ADULTERATED.
Gin.....	4	3	1
Sherry	1	1	0
Whisky	5	3	2
Brandy	1	1	0
Rum	1	1	0
Port Wine.....	1	1	0
Aerated Lemonade	1	0	1
Aerated Ginger Ale.....	1	1	0
Cider	2	2	0
Quinine Wine.. ..	1	1	0
Ipecacuanha Wine.....	1	1	0
Tinct. Nucis Vomicae	1	1	0
Tinct. Quininæ Ammoniata.....	1	1	0
Tinct. Quininæ.....	1	0	1
Tinct. Perchloride of Iron.....	1	1	0
Compound Spirit of Ether.....	2	2	0
Citrate of Magnesia.....	1	1	0
Liquor Arsenicalis.....	1	1	0
Mercurial Ointment.....	1	1	0
Cream of Tartar	1	0	1
Liq. Ammonia Acetatis.....	1	1	0
Ammonia	1	1	0
Seidlitz Powder.....	1	1	0
Zinc Ointment.....	1	1	0
Beer	1	1	0
	<hr/> 221 <hr/>	<hr/> 187 <hr/>	<hr/> 34 <hr/>

Percentage of adulteration, 15.4.

The percentage of adulteration in 1903 was 10.1, so that 1904 shows a falling off in this respect.

The adulterations outside milk and other dairy products were chiefly in the direction of preservatives, these are dealt with in a special section.

List showing extent of adulterations in adulterated articles :—

Milk :—

NUMBER OF SAMPLES ADULTERATED.	EXTENT OF ADULTERATION.	REMARKS.
2	4% of added water.	
1	5% of added water.	
1	6% of added water.	
1	7% of added water.	
1	9% of added water.	
1	1% of added water, and 1% of abstracted fat.	.. No action taken.
1	2% of abstracted fat.	.. No action taken.
2	3% of abstracted fat.	.. No action taken
1	11% of abstracted fat.	
1	12% of abstracted fat.	
1	14% of abstracted fat.	
1	16% of abstracted fat.	
1	29% of abstracted fat.	
1 (skim)	10% of added water.	
1 (skim)	42% of added water	

Butter :—

1	16.1% of added water.	.. Vendor warned.
1	16.6% of added water	.. Vendor warned.

Note.—16% of water is permitted.

Cream Cheese :—

1	4.7% of added water	.. No action taken
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Note.—There is no standard for cheese.

Lime Juice :—

1	Saccharin, traces	.. No action taken
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Gin :—

1	2½% of added water	.. No action taken.
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Whisky :—

1	2½% excess of water	.. Vendor informed.
1	2¼% excess of water	.. Vendor informed.

Tincture of Quinine :—

NO. OF SAMPLES ADULTERATED.	EXTENT OF ADULTERATION.	REMARKS.
I	15% of added water.	
Cream of Tartar	Small trace of lead.	.. No action taken.
Aerated Lemonade	About $\frac{1}{366}$ grain of lead...	No action taken.

Action was taken in all the cases not remarked on in the above list. It is unfortunate that any falling below the standard as regards milk, even the smallest is not punished, for the standard set is so low that a scientific milk dealer could almost invariably water his milk to a considerable extent and yet escape prosecution.

During the year, legal proceedings were taken against 14 offenders, with the result that 11 were convicted. The total of the penalties inflicted amounted to £31 os. od. inclusive of costs. Three other cases were dismissed on payment of costs for various reasons.

I desire to draw special attention to the case numbered 79, where, though the analyst certified that 29% of fat had been abstracted, the case was nevertheless dismissed. I am informed that the defence attempted to prove, and evidently convinced the magistrates, that the milk was delivered in the condition in which it had been taken from the cows. If so, it must have been a remarkable herd and in a remarkable condition. It is certainly remarkable that the skill of the advocate for the defence should cause one of the worst cases during the year to be dismissed.

List of cases under the Food and Drugs Acts in which proceedings were taken for adulteration :—

SAMPLE.	RESULT OF ANALYSIS.	NUMBER OF SAMPLE.	RESULT OF PROSECUTION.
New Milk	Added water 5%	9	Fined 40s. inclusive.
„ „	Added water 9%	10	Dismissed on payment of 9/6 costs. Connected with case No. 15.
„ „	Added water 4%	15	Fined 40s. inclusive.

SAMPLE.	RESULT OF ANALYSIS.	NUMBER OF SAMPLE.	RESULT OF PROSECUTION.
Skimmed Milk	Added water 10%	66	Fined £10 inclusive. 2nd conviction.
New Milk	Abstracted fat 29%	79	Case dismissed.
„ „	Abstracted fat 14%	84	Fined 40s. inclusive.
„ „	Abstracted fat 12%	85	Dismissed on payment of costs. Connected with case No. 99.
„ „	Abstracted fat 11%	88	Dismissed on payment of costs. Connected with case No. 99.
„	Abstracted fat 16%	99	Fined £3 inclusive.
„ „	Added preservative, boric acid 7 grains per pint	125	Case dismissed.
Tincture of Quinine	Added water 15%	130	Case dismissed.
Skimmed Milk	Added water 42% boric acid 6 grains per pint	141	Fined £5 inclusive.
New Milk	Added water 7%	203	Fined 40s. inclusive.
„ „	Added water 4%	215	Proceedings pending.

The following sample was purchased in 1903, but proceedings were taken in 1904.

Skimmed Milk	Added water 28% and artificially coloured	201	Fined £5 inclusive.
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FOOD PRESERVATIVES.—These were found in nine cases.

New Milk	traces of	Boric acid.
„ „	..	..	7 grains per pint	..	..	..	Boric acid.
Skim Milk	..	..	traces of	..	..	..	Boric acid.
„ „	..	..	6 grains per pint	..	..	..	Boric acid.
Butter	..	..	0.6%	..	..	..	Boric acid.
Cream Cheese	..	..	0.6%	..	..	..	Boric acid.
Lime Juice	..	..	7½ grains per pint	..	..	..	Salicylic acid.
Potted Shrimps	..	..	59½ grains per pound	..	..	..	Boric acid.
Green Peas	..	..	0.008%, or 0.56 grains per pound of Copper.				

It is a curious illustration of the inutility of reports presented by Royal Commissions and Departmental Committees that the report of the Committee on Preservatives and colouring matters in food has never received legal sanction. The Committee reported that no preservative whatever should be added to milk, yet magistrates refuse to consider themselves bound by the report of a body of competent men who interviewed experts from all over the country. The case mentioned above, where boric acid to the extent of 7 grains to the pint had been added to milk, was brought before the magistrates, and though evidence was tendered, relying on the Committee's report of the needlessness of any preservative, and of the actual injuriousness of boric acid in milk, the case was dismissed. The magistrates in so acting are taking a considerable responsibility, for there can be little doubt that boric acid is injurious to infants and invalids. A pint of milk is no uncommon amount to take, and yet anyone taking this amount of the milk above mentioned would be taking an amount of boric acid equivalent to a medicinal dose given to secure a definite result. The dose of boric acid recommended medicinally by the British Pharmacopolia is 5-15 grains.

The vendor of the skim milk mentioned was prosecuted and convicted on other grounds.

Butter and cheese stand on a different ground as regards boron preservatives. They are not taken in large amounts, and a certain amount of preservative was thought permissible by the Committee.

Salicylic acid in lime juice was thoroughly considered during the year and it was decided that a prosecution would be likely to fail considering the small amount of lime juice taken at one time.

An immense amount of boric acid is put in potted shrimps. The question has frequently been fought in the northern shires, and as a rule prosecutions have been unsuccessful.

The vendor of the bottled imported peas containing copper was communicated with, and he agreed to cease selling the particular brand affected.

It is earnestly to be desired that Parliament would deal with this question. The adulteration of food with preservatives is on the increase. It cannot be contended by anyone who comes to the question with an unprejudiced

mind that these chemical substances when taken regularly will not be injurious to health. But till special regulations are made those who make their profits without caring whether their products are injurious to the health of others or not will flourish.

MILK SUPPLY.—There are 34 cowsheds and 151 milkshops on the register. These have all been inspected by the Inspectors and most of them by myself. The condition in many cases leaves much to be desired. I hope to be able to make a number of necessary changes in them in the near future.

During the year, when making an application for registration as a milk purveyor and dairyman, a milk dealer requested me to sketch out a scheme for making his premises as perfect as possible for the purposes of his trade. The recommendations I made were not carried out as he made different arrangements for the storage of his milk ; but the recommendations slightly modified, may be of interest as showing the lines along which, in my opinion, a cellar dairy should be constructed, the cellar being under the milkshop.

1. A staircase leading directly from the shop to the cellar should be constructed. This staircase should be constructed of stone and blue bricks.
2. The opening in the cellar leading to the present staircase should be built up.
3. Drains. These should be exposed throughout their length and put in order under the supervision of the Sanitary Inspector.
4. The floor should be reconstructed, the present brick floor being abolished. Four inches of good cement concrete should be laid down, and on this tiles laid in cement, or if preferred, instead of tiles an additional inch of cement rendering should be laid on the concrete and finished to a smooth surface. No drain opening can be permitted in the floor.
5. The wall of the cellar next the street is damp ; it should be faced with glazed bricks or glazed tiles set in cement.
6. There is not sufficient light ; a second window should be constructed of the same size as the present one, taking the place of the coal shoot.

The ledge beneath the window should be sloped from the window to about 1-2 feet below its present top instead of remaining as at present a ledge on which dust can lodge.

7. To secure ventilation, the windows should be hinged at the bottom so as to fall inwards at the top when opened. As dust and flies are then liable to get in, wire gauze, or finely perforated zinc should be fixed over the top, while the sides of the hopper formed by the window when it has fallen a few inches inward should be glazed and fixed.
8. The remaining walls of the cellar should be tiled, or what is perhaps preferable, plastered with Keenes' or adamant cement, which should then be painted white with four coats of white paint. This would provide a surface without any joints in which dust could lodge, and which could be regularly washed.
9. It is desirable that in the reconstruction of the floor the opportunity should be taken to round off the meeting of the floor and wall, particularly at the corners.
10. The ceiling should be examined and put in thorough order if necessary, and then painted or limewashed.
11. Nothing but milk and other dairy products should be kept in this cellar dairy, and the milk stored should always be covered with muslin to protect it from flies and dust.

THE DISINFECTING STATION—The number of articles disinfected during each month of the year 1904 was :—

January	..	..	..	..	..	1105
February	..	..	..	..	..	1166
March	..	..	..	..	..	1271
April ..	..	..	..	..	..	1266
May ..	..	..	..	..	..	961
June ..	..	..	..	..	..	1015
July ..	..	..	..	..	..	823
August	..	..	..	..	..	1294
September	..	..	..	..	..	1214

October	..	..	..	..	..	1366
November	..	..	..	..	..	1539
December	..	..	..	..	..	1944
						<hr/> 14964 <hr/>

The total for 1903 was 7696.

COMMON LODGING HOUSES.—The Inspector, (Mr. Harper), reports :
 “ During the year weekly visits have been made by me to the above houses for the purpose of inspection, and for the collection of the weekly returns. Two midnight visits were made for the purpose of detecting overcrowding. The houses have been whitewashed throughout at the times stated in the byelaws, viz., the first weeks in April and October. The beds and bedding have been inspected when considered necessary.”

“ Below is appended a statement of the number of lodgers for the year 1904, and also for the year 1903 :—

		CASUAL LODGERS.		REGULAR LODGERS.	
		MALES.	FEMALES.	MALES.	FEMALES.
1903	..	12543	2803	..	3174 259
1904	..	14231	2840	..	3447 362

Increase among casual lodgers—males 1688, females 37.

Increase among regular lodgers—males 273, females 103.

“ A new common lodging house has been built in Castle Street by Mr. Charles Jackson, and registered by the Local Authority. This lodging house is a very great improvement upon the older type of house, and it appears to be appreciated by the class of people who visit these houses.”

CANAL BOATS.—The Inspector (Mr. Sowerbutts) reports : “ During the year 55 inspections were made of canal boats and infringements of the regulations were discovered in 7 instances, viz :—

No certificate produced	..	..	..	3
Filthy condition	..	..	..	2
No water vessel	..	..	..	2

Warnings were given in these cases, but as explained last year, the boats pass beyond the municipal boundaries before notice-serving is possible.

SUMMARY OF ROUTINE WORK CARRIED OUT BY THE HEALTH DEPARTMENT DURING THE YEAR 1904.

Nuisances reported by the Sanitary Inspectors.....	2819
Nuisances reported at the Office by residents.....	73
Nuisances abated.....	2690
Statutory notices served for the abatement of nuisances.....	1479
Inspection of houses after complaint of nuisance.....	117
Visits to houses in which infectious illness existed.....	5229
Houses disinfected	1535
Drains tested with the asphyxiator.....	85
Drains found defective after testing with the asphyxiator.....	65
Drains tested with water.....	238
Drains reported choked and subsequently disinfected and amended	107
Drains reconstructed.....	213
Drains repaired, and gullies substituted for bell-traps.....	688
Bath, lavatory, sink, waste pipes disconnected from drains and altered so as to discharge over gully traps	19
New pans fixed to closets.....	98
Indoor soil pipes abolished and new ones fixed outside.....	26
Closets supplied with flushing apparatus.....	48
Houses cleansed and whitewashed.....	484
Accumulations of manure and offensive refuse removed.....	40
Animals that were kept so as to be a nuisance removed.....	40
Overcrowding in houses abated.....	5
Animals kept in contravention of the bye-laws.....	7
Slaughter-houses, cow-sheds, milk-shops, inspected and found defective in sanitation.....	66
Dilapidated houses repaired	114
Houses unfit for habitation.....	18
Yard pavings re-laid and repaired.....	255
Spoutings repaired and renewed.....	54
Workshops and factories inspected and found defective in sanitation	163
Premises without a proper supply of water.....	2
Domestic workshops inspected and found defective in sanitation....	23
Notices served under Section 36 of the Public Health Act, 1875....	7
Houses supplied with town water.....	1
New slop sinks fixed.....	70
Miscellaneous	220

TABLES

Required by the Local Government Board.

TABLE I.

Vital Statistics of Whole District during 1904, and previous years.

COUNTY BOROUGH OF NORTHAMPTON.

Year.	Population estimated to middle of each Year.	Births.		Total Deaths Registered in the District.				Total Deaths in Public Institu- tions in the District.	Deaths of Non-residents Regis- tered in Public Institutions in the District	Deaths of Residents Registered in Public Institutions beyond the District	Nett Deaths at all Ages belonging to the District.	
		Number.	Rate. *	Under 1 Year of Age.		At all Ages.					Number.	Rate. *
				Number.	Rate per 1,000 Births registered.	Number.	Rate. *					
I	2	3	4	5	6	7	8	9	10	11	12	13
1894	61057	1851	30.3	252	136.1	987	16.1	180	79	3	911	14.9
1895	61072	1926	31.5	281	145.8	1000	16.3	167	87	5	918	15.0
1896	61087	1799	29.4	271	150.6	1066	17.4	174	87	9	988	16.1
1897	61102	1752	28.6	323	184.3	1103	18.0	150	78	17	1042	17.0
1898	61117	1694	27.7	307	181.2	1074	17.5	179	90	11	995	16.2
1899	61132	1671	27.3	253	151.4	1004	16.4	176	95	12	921	15.0
1900	61147	1546	25.2	224	144.8	1041	17.0	199	101	11	951	15.5
Borough extended.												
1901	87021	2345	26.9	334	142.4	1269	14.5	174	62	9	1216	13.9
1902	88206	2272	25.7	301	132.4	1358	15.4	184	75	11	1294	14.7
1903	89960	2194	24.4	301	137.2	1307	14.5	222	88	10	1219	13.5
Averages for years 1894-1903	69290	1905	27.7	285	150.6	1121	16.3	180.5	84	10	1045.5	15.2
1904	90340	2102	23.3	279	132.7	1293	14.3	245	108	9	1185	13.1

* Rates in Columns 4, 8, and 13 calculated per 1,000 of estimated population.

NOTE.—The deaths to be included in Column 7 of this Table are the whole of those registered during the year as having actually occurred within the district or division. The deaths to be included in Column 12 are the number in Column 7, corrected by the subtraction of the number in Column 10 and the addition of the number in Column 11.

By the term "Non-residents" is meant persons brought into the district on account of sickness or infirmity, and dying in public institutions there; and by the term "Residents" is meant persons who have been taken out of the district on account of sickness or infirmity, and have died in public institutions elsewhere.

The "Public institutions" to be taken into account for the purposes of these Tables are those into which persons are habitually received on account of sickness or infirmity, such as hospitals, workhouses, and lunatic asylums. A list of the Institutions in respect of the deaths in which corrections have been made should be given on the back of this Table.

Area of District in acres
(exclusive of area
covered by water). } ... 3,432

Total population at all ages ... 87,021
Number of inhabited houses ... 17,602
Average number of persons per house .. 4.94

} At Census
of 1901.

I.	II.	III.
Institutions within the District receiving sick and infirm persons from outside the District.	Institutions outside the District receiving sick and infirm persons from the District.	Ohter Institutions, the deaths in which have been distributed among the several localities in the District.
<p>The Northampton General Hospital.</p> <p>The Northampton Workhouse.</p> <p>St. Andrew's Hospital for the Insane.</p>	<p>The Northampton Borough Hospital for Infectious Diseases.</p> <p>The Northampton Borough Hospital for Smallpox.</p>	The Northampton Gaol.

Is the Union Workhouse within the District? Yes.

TABLE II.
Vital Statistics of separate Localities in 1904 and previous years.
COUNTY BOROUGH OF NORTHAMPTON.

Names of Localit es.	Whole District.				St. Michael Ward.				Castle Ward.				St. Crispin Ward.				South Ward.				North Ward.				Kingsthorpe Ward.				St. James' Ward.				Far Cotton Ward.				St. Edmund Ward.			
Year.	Population esti- mated to middle of each year.	Births registered.	Deaths at all Ages.	Deaths under 1 year.	Population esti- mated to middle of each year.	Births registered.	Deaths at all Ages.	Deaths under 1 year.	Population esti- mated to middle of each year.	Births registered.	Deaths at all Ages.	Deaths under 1 year.	Population esti- mated to middle of each year.	Births registered.	Deaths at all Ages.	Deaths under 1 year.	Population esti- mated to middle of each year.	Births registered.	Deaths at all Ages.	Deaths under 1 year.	Population esti- mated to middle of each year.	Births registered.	Deaths at all Ages.	Deaths under 1 year.	Population esti- mated to middle of each year.	Births registered.	Deaths at all Ages.	Deaths under 1 year.	Population esti- mated to middle of each year.	Births registered.	Deaths at all Ages.	Deaths under 1 year.	Population esti- mated to middle of each year.	Births registered.	Deaths at all Ages.	Deaths under 1 year.				
	a.	b.	c.	d.	a.	b.	c.	d.	a.	b.	c.	d.	a.	b.	c.	d.	a.	b.	c.	d.	a.	b.	c.	d.	a.	b.	c.	d.	a.	b.	c.	d.	a.	b.	c.	d.				
1894	61057	1851	911	252																																				
1895	61072	1926	918	281																																				
1896	61087	1799	988	271																																				
1897	61102	1752	1042	323																																				
1898	61117	1694	995	307																																				
1899	61132	1671	921	253																																				
1900	61147	1546	951	224																																				
Boro' extended 1901	87021	2345	1216	334																					7119		80	35	4086	137	64	24								
1902	88206	2272	1294	301																					7415		93	21	4276	122	60	7								
1903	89960	2194	1219	301	141110		157	31	10645		163	47	11335		146	29	7575		138	31	14136		212	70	9732		127	25	7912		92	28	4544	129	50	17	9970		126	21
Averages of Years 1894 to 1903	69290	1905	1045.5	285																					7482		88	28	4302	129	58	16								
1904	90340	2102	1185	279	14052	283	182	36	10454	252	165	49	11184	246	156	24	7517	147	107	15	14077	371	195	61	10051	263	104	29	8110	207	100	29	4678	140	63	16	10217	202	113	20

NOTES.—(a) The separate localities adopted for this Table should be areas of which the populations are obtainable from the census returns, such as wards, parishes or groups of parishes, or registration sub-districts. Block 1 may, if desired, be used for the whole district: and blocks 2, 3, &c., for the several localities. In small districts without recognised divisions of known population this Table need not be filled up.

(b) Deaths of residents occurring in public institutions beyond the district are to be included in sub-columns c of this Table, and those of non-residents registered in public institutions in the district excluded. (See note on Table I. as to meaning of terms "resident" and "non-resident.")

(c) Deaths of residents occurring in public institutions, whether within or without the district, are to be allotted to the respective localities according to the addresses of the deceased.

(d) Care should be taken that the gross totals of the several columns in this Table respectively equal the corresponding totals for the whole districts in Tables I. and IV.: thus, the totals of sub-columns a, b, and c should agree with the figures for the year in the columns 2, 3, and 12, respectively, of Table I.: the gross total of the sub-columns c should agree with the total of column 2 in Table IV., and the gross total of sub-columns d with the total of column 3 in table IV.

TABLE III.
COUNTY BOROUGH OF NORTHAMPTON.
Cases of Infectious Disease notified during the year 1904.

Notifiable Disease.	Cases notified in Whole District.							Total Cases notified in each locality. (Wards).									No. of Cases removed to Hospital from each locality.								
	At all Ages.	At Age—Years						1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9
		Under 1.	1 to 5.	5 to 15.	15 to 25.	25 to 65.	65 and upwards.	St. Michael.	Castle.	St. Crispin.	South.	North.	Kings- thorpe.	St. James'.	Far Cotton.	St. Edmund.	St. Michael.	Castle.	St. Crispin.	South.	North.	Kings- thorpe.	St. James'.	Far Cotton.	St. Edmund.
Small-pox	4	.....	.....	1	.....	3	.....	.....	.....	.....	.....	.....	.....	3	1	.....	.....	.....	.....	.....	.....	.....	3	1	.....
Cholera ... ..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Diphtheria	39	.....	17	9	5	8	.....	4	3	3	5	7	8	1	2	6	.....	.....	.....	.....	.....	.....	.....	.....	.....
Membranous Croup	9	.....	8	1	.....	.....	.....	1	.....	2	1	2	2	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Erysipelas	129	4	5	10	17	77	16	12	12	13	15	23	17	18	7	12	.....	.....	.....	.....	.....	.....	.....	.....	.....
Scarlet Fever	2224	22	558	1418	181	45	.....	272	231	276	164	452	158	234	183	254	85	108	111	72	154	43	58	43	74
Typhus Fever ... ..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Enteric Fever	30	.....	1	11	8	10	.....	4	5	2	6	.....	2	8	2	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
Relapsing Fever ... ..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Continued Fever ... ..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Puerperal Fever	4	.....	.....	.....	3	1	.....	.....	1	.....	...	2	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Plague ... ..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Totals	2439	26	589	1450	214	144	16	293	252	296	191	486	187	265	196	273	85	108	111	72	154	43	61	44	74

NOTES.—The localities adopted for this table should be the same as those in Tables II. and IV.

State in space below the name of the isolation hospital, if any, to which residents in the district, suffering from infectious disease are usually sent. Mark (H) the locality in which it is situated, or if not within the district, state where it is situated, and in what district. Mark (W) the locality in which a workhouse is situated.

H Isolation Hospitals—The Borough Hospitals, (1) Harboro' Road, (2) Welford Road, (3) near Hardingstone (Smallpox).

W. Workhouse—St. Giles.

COUNTY BOROUGH

Causes of, and Ages at,

CAUSES OF DEATH. 1	Deaths at the subjoined Ages of "Residents" whether occurring in or beyond the District.						
	All Ages.	Under 1 year.	1 and under 5	5 and under 15.	15 and under 25.	25 and under 65.	65 and up- wards.
	2	3	4	5	6	7	8
Small-pox	1	...	...	1	...	...	...
Measles	1	1	...	...	...	...	...
Scarlet Fever	40	1	20	16	3	...	...
Whooping Cough	4	2	2	...	...	...	...
Diphtheria & Membranous Croup ...	9	...	9	...	...	...	...
Croup	3	...	3	...	...	...	...
Fever { Typhus ... ..	...	...	...	...	...	...	...
{ Enteric ... ..	...	...	...	...	...	...	...
{ Other continued ... ..	...	...	...	...	...	...	...
Epidemic Influenza	4	...	1	...	...	1	2
Cholera ... ..	...	...	...	...	...	...	...
Plague ... ..	...	...	...	...	...	...	...
Diarrhœa. (See notes at back) ...	84	56	9	1	2	5	11
Enteritis. (See notes at back) ...	13	4	1	1	...	3	4
Puerperal Fever... .. ditto	...	...	...	...	...	...	...
Erysipelas	3	...	...	...	1	2	...
Other Septic Diseases	4	2	...	...	...	1	1
Phthisis (Pulmonary Tuberculosis) ditto	104	...	4	5	30	65	...
Other Tubercular Diseases	40	9	15	7	3	6	...
Cancer Malignant Disease ditto	67	...	...	...	1	37	29
Bronchitis	102	10	9	...	...	23	60
Pneumonia	63	18	18	2	3	15	7
Pleurisy	2	...	1	...	1	...	...
Other Diseases of Respiratory Organs	4	...	...	...	...	3	1
Alcoholism }	15	...	.	...	...	10	5
Cirrhosis of Liver }							
Venereal Diseases ... ..	...	...	...	...	...	...	...
Premature Birth	57	57	...	...	...	...	...
Diseases and Accidents of Parturition	5	...	...	...	...	5	...
Heart Diseases	97	1	1	6	5	53	31
Accidents	28	6	8	2	2	7	3
Suicides	18	...	...	...	...	17	1
Brain and Nervous System	53	...	...	2	...	20	31
Marasmus	51	50	1	...	...	...	...
Senile Decay	77	...	...	...	...	1	76
Apoplexy	43	...	...	...	...	17	26
Diabetes	8	...	...	2	...	3	3
Kidney and Urinary System	23	...	1	...	2	12	8
Convulsions	41	31	9	1	...	...	...
All other Causes	121	31	14	4	7	43	22
All Causes	1185	279	126	50	60	349	321

(See Notes

OF NORTHAMPTON.
Death during Year 1904.

Deaths at all ages of "Residents" belonging to Localities, whether occurring in or beyond the District.									Total Deaths whether of Resi- dents or Non-Resi- dents in Public In- stitutions in the District.
St. Mich- aels	Castle.	St Crispin's	South.	North.	Kings- thorpe.	St. James,'	Far Cotton.	St. Ed- mund's.	
9	10	11	12	13	14	15	16	17	18
...	...	...	...	...	...	1	...	...	...
...	...	...	1	...	...	...	...	...	...
5	6	4	1	10	1	1	5	7	...
3	...	...	...	1	...	...	...	...	1
2	1	1	...	2	2	1	...	...	4
...	...	2	...	...	...	...	...	1	...
...
...	...	...	...	...	...	...	...	...	2
...
1	...	...	...	1	1	...	...	1	...
...
...
19	17	7	4	11	2	12	3	9	10
1	1	3	2	3	1	1	1	...	1
...
...	...	...	...	2	1	...	...	...	...
...	...	1	...	1	...	1	1	...	7
21	8	18	10	16	8	10	2	11	19
6	3	5	7	9	2	...	4	4	10
18	6	6	6	9	4	6	3	9	24
11	14	16	11	12	9	14	8	7	6
3	18	8	6	15	3	2	...	8	11
...	1	...	...	...	1	...	...	...	...
...	1	2	...	1	...	...	...	...	1
...
1	6	2	1	3	1	...	...	1	2
...
8	9	2	5	13	8	2	5	5	1
1	1	1	...	...	1	...	1	...	...
15	18	12	9	10	13	11	2	7	21
2	7	4	2	3	5	2	2	1	22
1	2	1	5	4	...	1	1	3	3
11	5	11	3	7	5	2	2	7	16
5	4	4	3	18	4	6	3	4	...
18	8	5	10	11	5	4	7	9	19
5	8	7	5	8	4	1	1	4	7
1	...	2	...	1	1	1	...	2	1
2	2	3	5	3	2	4	...	1	14
2	6	4	2	5	7	5	5	5	1
20	13	25	9	16	13	12	7	7	42
182	165	156	107	195	104	100	63	113	245

NOTES ON TABLES I., II., III., and IV.

NOTES.—(a) In this table all deaths of “Residents” occurring in public institutions, whether within or without the district, are to be *included* with the other deaths in the columns for the several age groups (columns 2-8). They are also in columns 9-15, to be *included* among the deaths in their respective “Localities” according to the previous addresses of the deceased as given by the Registrars. “Deaths of Non-residents” occurring in public institutions in the district are in like manner to be *excluded* from columns 2-8 and 9-15 of this Table.

(b) See notes on Table I. as to the meaning of “Residents” and “Non-residents,” and as to the “Public Institutions,” to be taken into account for the purposes of these tables. The “Localities” should be the same as those in Tables II. and III.

(c) All deaths occurring in public institutions situated within the district, whether of “Residents” or of “Non-residents” are in addition to being dealt with as in note (a), to be entered in the last column of this Table. The total number in this column should equal the figures for the year in column 9, Table I.

(d) The total deaths in the several “Localities” in columns 9-15 of this Table should equal those for the year in the same localities in Table II., sub-columns c. The total deaths at all ages in column 2 of this Table should equal the gross total of columns 9-15, and the figures for the year in column 12 of Table I.

(e) Under the heading of “Diarrhœa” are to be included deaths certified as from diarrhœa alone, or in combination with some other cause of ill-defined nature; and also deaths certified as from

Epidemic enteritis;

Zymotic enteritis;

Epidemic diarrhœa; summer diarrhœa;

Dysentery and dysenteric diarrhœa;

Choleraic diarrhœa, cholera, cholera nostras (in the absence of Asiatic cholera).

Under the heading of "Enteritis" are to be included those certified as from Gastro-enteritis, Muco-enteritis, and Gastric catarrh, unless from information obtained by enquiry from the certifying practitioner or otherwise, the Medical Officer of Health should have reason for including such deaths, especially those of infants, under the specific term "Diarrhœa." Deaths from diarrhœa secondary to some other well-defined disease should be included under the latter.

Under the headings of "Cancer" and "Puerperal Fever" should be included all registered deaths from causes comprised within these general terms.

—:O:—

In recording the facts under the various headings of Tables I., II., III., and IV., attention has been given to the notes on the Tables.

JAMES BEATTY, M.D.,

Medical Officer of Health.

May 20th, 1905.

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